IB Interview Guide, Module 4: Equity Value, Enterprise Value, and Valuation Metrics and Multiples

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Overview & Key Rules of Thumb

Questions on **Equity Value**, **Enterprise Value**, and **valuation metrics and multiples** are some of the most common ones in interviews.

Unfortunately, most guides, textbooks, and websites do a *very* poor job of explaining these topics.

With accounting, other sources may not give much detail, but at least the information is correct. **But with Equity Value and Enterprise Value, the information is outright WRONG**.

For example, if someone asked you what "Enterprise Value" meant, what would you say?

From the Google search results, a reasonable answer might be: "Market Capitalization, plus Debt, Noncontrolling interests, and Preferred Stock."

Other sources give explanations like: "Enterprise Value represents the 'theoretical takeover price' of a company."

All these definitions are wrong or misleading.

The **REAL** definition of Enterprise Value is: **"The value of a company's core business operations to ALL the investors in the company."**

In the sections below, we'll delve into this definition, show you how to use these concepts in real life, explain how to pair Equity Value and Enterprise Value with operating metrics to create **valuation multiples**, and explain how everything changes after specific events.

Key Rule #1: The REAL Definitions of Equity Value and Enterprise Value

These concepts go back to that all-important formula:

Company Value = Cash Flow / (Discount Rate – Cash Flow Growth Rate)

The accounting lessons dealt with the **cash flow** part of that formula.

Equity Value and **Enterprise Value** deal with the **Company Value** part.

Specifically, how do you *measure* "Company Value"?

That is tricky to answer because companies are worth different amounts to different types of investors.

It's also tricky to answer because "the market" may say a company is worth one amount, but its *intrinsic* value may be something different.

Based on these observations, there are **4 ways you can measure a company's value**:

- **The Company's "Market Value"** – What *is* the company worth right now according to the stock market, its current owners, or its current investors?

- **The Company's Implied or "Intrinsic" Value** – What *should* the company be worth according to your analysis and views?

Why might the Market Value be different from the Implied Value?

Let's say you're analyzing a company that has $100 in cash flow.

Both you and the company's current owners believe the appropriate Discount Rate is **10%** because similar companies are expected to generate annual returns of 10% in the long term.

However, you disagree about the expected growth rates. You believe the company's cash flow will grow at 4% in the future, but the current owners think it will grow at 5%.

As a result, the company's value is very different to both groups:

Implied Value to YOU = $100 / (10% – 4%) = $1,666.

Market Value = $100 / (10% – 5%) = $2,000.

So the owners want $2,000 for the company, or they won't sell it.

But you believe that the company is too expensive and that its intrinsic value is quite a bit lower. As a result, you won't buy the company at that price.

That's the main reason why a company's Market Value may be different from its Implied Value: **you believe the company's future growth will be one number, but "the market," or other investors, believe something else**.

You might also disagree about the Discount Rate or even the company's Cash Flow. But *most* valuation differences boil down to disagreements about future growth.

Now that we've explained how Implied Value and Market Value differ, we need to define "Company Value" more precisely.

The two main ways to measure "Value" are **Equity Value** and **Enterprise Value**:

- **Equity Value:** The value of **EVERYTHING** a company has (i.e., **ALL** its Assets), but only to **EQUITY INVESTORS** (i.e., common shareholders).

- **Enterprise Value:** The value of the company's **CORE BUSINESS OPERATIONS** (i.e., **ONLY** the Assets related to its core business), but to **ALL INVESTORS** (Equity, Debt, Preferred, and possibly others).

If the company is publicly traded – you can buy its shares on the stock market – then its **Current Equity Value** is its **Market Capitalization**: Its shares outstanding times its current share price.

To move from a company's Equity Value to its Enterprise Value, go back to the **definitions**:

- **Equity Value** = Value of Core-Business Assets + Value of Non-Core-Business Assets
- **Enterprise Value** = Value of Core-Business Assets

- **Equity Value** = Value to Equity Investors
- **Enterprise Value** = Value to Equity Investors + Value to Debt Investors + Value to Preferred Investors (and possibly others)

So you **subtract non-core-business Assets** and **add Liability & Equity items that represent other investor groups** to make this move. Here's a simple example:

Assumptions & Model Output

Tax Rate:	40%	**Current Equity Value:**	**$ 10,000**
		(+) Debt:	550
Share Price:	$ 10.00	(+) Preferred Stock:	200
Shares Outstanding:	1,000	(+) Noncontrolling Interests:	-
Initial Cash Balance:	$ 100	(-) Cash & Investments:	(300)
		Current Enterprise Value:	**$ 10,450**

We'll get into "Noncontrolling Interests" later on… don't worry about it for now.

We're using the company's **current share price** and **shares outstanding** to calculate its Equity Value ($10.00 * 1,000 = $10,000), so this counts as its **Current Equity Value**.

The Current Equity Value is what *everyone else* in the market – not us! – thinks **ALL** the company's Assets are worth.

Then, to calculate the company's Current Enterprise Value, we add its Debt, Preferred Stock, and Noncontrolling Interests, and we subtract its Cash and Investments.

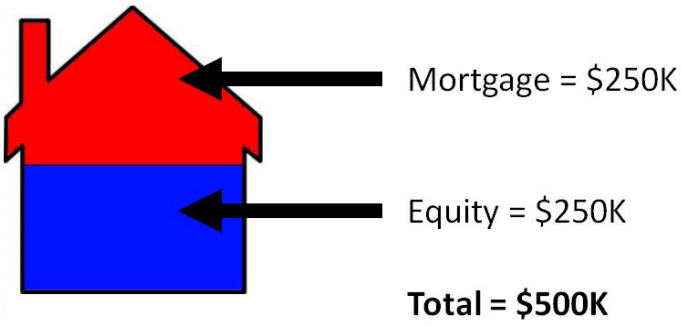
The company's Cash and Investments count as "non-core-business Assets" **because the company doesn't need them to sell products to customers**.

The company does need a small amount of cash to continue operating, but as a simplification, you ignore that in the calculation.

You add the Debt, Preferred Stock, and Noncontrolling Interests **because they represent other investor groups**.

You calculate Equity Value and Enterprise Value **only at a specific point in time**; there's no such thing as a "projected" Enterprise Value, for example.

To understand Equity Value and Enterprise Value with a real-life analogy, pretend you're buying a $500K house with a $250K mortgage and $250K of your own money ("Equity"):



This $500K corresponds to **only the "core" parts of the house:** The foundation, the rooms, the walls, and the land.

When you go out to inspect the yard, you discover that the current owner has left **garden tools** and **cleaning supplies** out there.

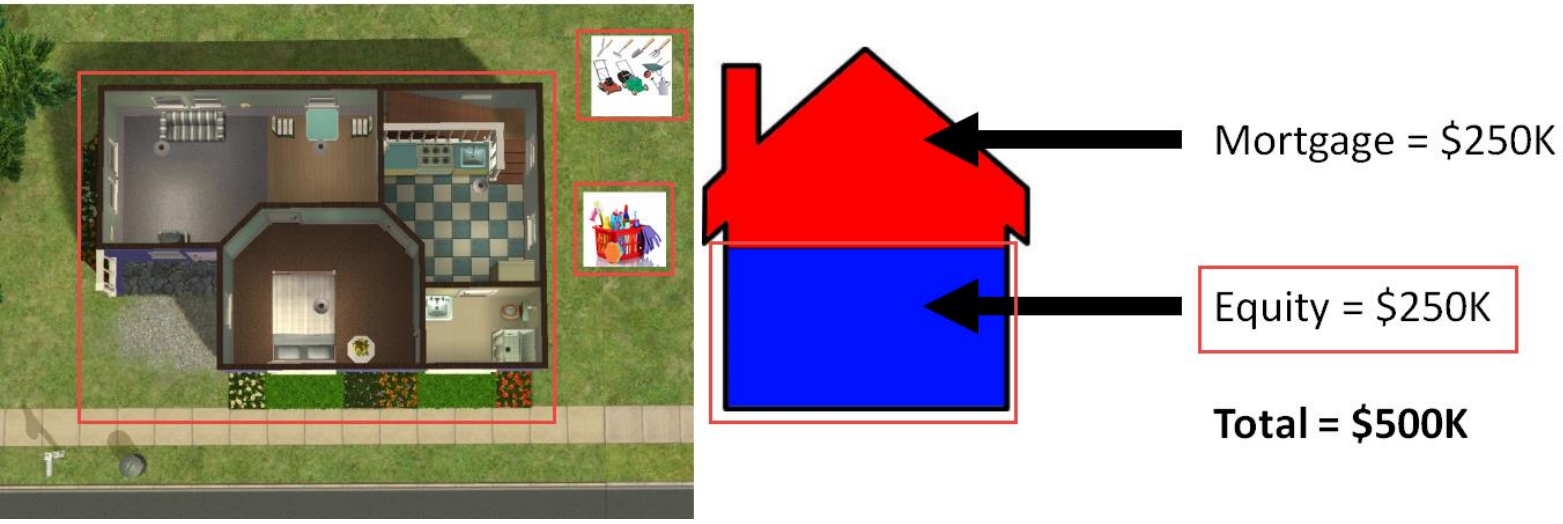
You don't care about these items because they're not a **core part of the house**.

You plan to sell them as soon as you buy the house because you don't need them.

But they come with the house, and the owner, therefore, has to charge you for them.

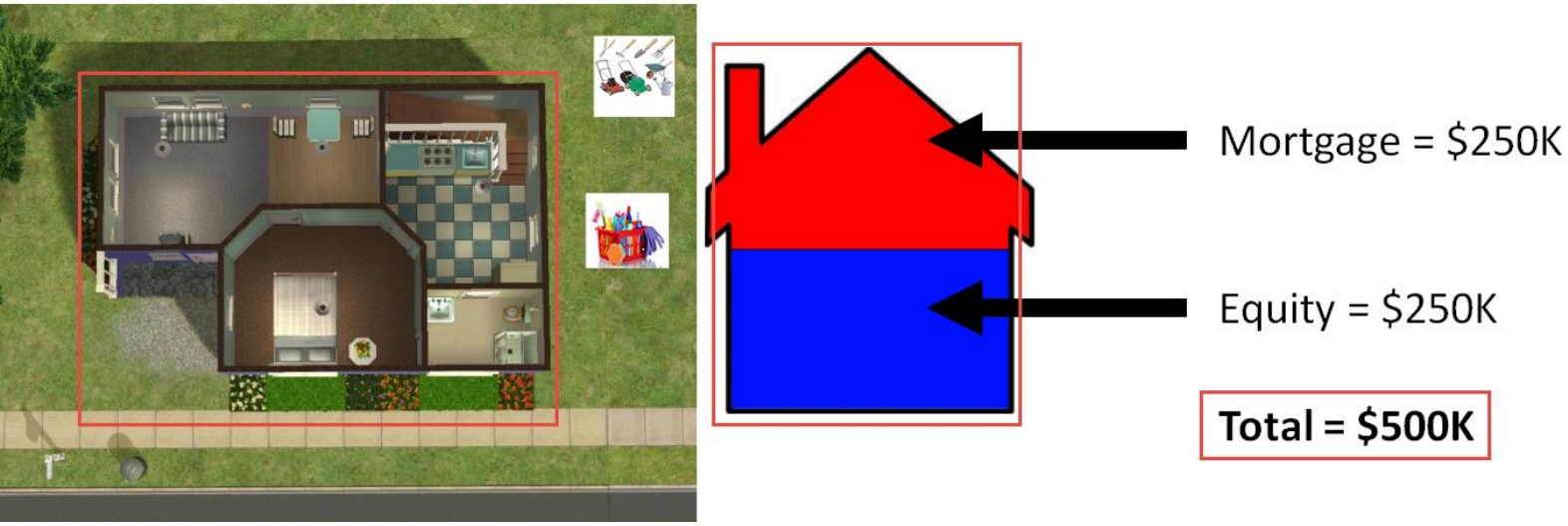
In this context, here's what **Equity Value** and **Enterprise Value** represent:

Equity Value represents **EVERYTHING** that comes with this house - the property, foundation, walls, rooms, etc., plus those random gardening tools and cleaning supplies... but **ONLY TO YOU** and the down payment you just made.



You've made the $250K down payment, and now you get *everything* that comes with the house, even the completely random items. That's **Equity Value**.

Whereas **Enterprise Value** represents **ONLY** the core parts of the house - the land, foundation, walls, rooms, etc. - but to **BOTH** you, the equity investor, and to the mortgage lenders that helped you buy the house.



So Enterprise Value **includes new items** – the mortgage – but also **leaves out** other items, like those gardening tools and cleaning supplies.

Moving back to companies, here's the **Equity Value** view of Coach (the luxury fashion company):

COACH, INC.
CONSOLIDATED BALANCE SHEETS
ASSETS

Current Assets:	
Cash and cash equivalents	$ 1,291.8
Short-term investments	234.0
Trade accounts receivable, less allowances of $3.1 and $1.4, respectively	219.5
Inventories	485.1
Deferred income taxes	98.4
Prepaid expenses	73.1
Other current assets	104.6
Total current assets	2,506.5
Property and equipment, net	732.6
Long-term investments	406.0
Goodwill	434.2
Intangible assets	359.9
Deferred income taxes	115.8
Other assets	111.9
Total assets	$ 4,666.9
LIABILITIES AND STOCKHOLDERS' EQUITY	
Current Liabilities:	
Accounts payable	$ 222.8
Accrued liabilities	600.6
Current debt	11.3
Total current liabilities	834.7
Long-term debt	879.1
Other liabilities	463.2
Total liabilities	2,177.0
Stockholders' Equity:	
Preferred stock: (authorized 25.0 million shares; $0.01 par value) none issued	—
Common stock: (authorized 1,000.0 million shares; $0.01 par value) issued and outstanding – 276.6 million and 274.4 million shares, respectively	2.8
Additional paid-in-capital	2,754.4
Accumulated deficit	(189.6)
Accumulated other comprehensive loss	(77.7)
Total stockholders' equity	2,489.9
Total liabilities and stockholders' equity	$ 4,666.9

These items represent the Equity Value of Coach because we're including **ALL** its Assets but **ONLY** its Common Equity on the L&E side of the Balance Sheet.

In real life, you would use the **MARKET VALUE** of the company's Equity or its **IMPLIED VALUE** according to your views of the company.

To move from Equity Value to Enterprise Value, you subtract the non-core-business Assets: Cash, Short-Term Investments, and Long-Term Investments.

And on the other side of the Balance Sheet, you add Debt and Preferred Stock since they represent other investor groups.

Here's what it looks like:

COACH, INC.
CONSOLIDATED BALANCE SHEETS
ASSETS

Current Assets:	
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These items represent the Enterprise Value of Coach because we're including **ONLY** its core-business Assets, but **ALL** the investor groups on the L&E side of the Balance Sheet.

In real life, you would use the **MARKET VALUES** of all these items or their **IMPLIED VALUES** according to your views of the company.

Which one is correct?

Both of them.

There is no "correct" way to view a company's value; there are just *different* ways of viewing it.

When you analyze companies, you'll move back and forth between Equity Value and Enterprise Value all the time.

You need to understand and use both because one analysis might give you Equity Value, but another analysis might produce Enterprise Value.

Let's tie together all these concepts with a simple example.

Suppose that you want to continue with the diagrams above and assess **Coach**.

To calculate its Current Equity Value and Current Enterprise Value, you start by taking its shares outstanding and multiplying by its share price.

If it has 1 billion shares outstanding, and its current share price is $10.00, its **Current Equity Value is $10 billion**.

Then, you subtract its Cash, Investments, and non-core-business Assets, which are worth $1.3 billion + $234 million + $406 million = ~$1.9 billion total.

Then, you add its Debt and Preferred Stock, which are worth $11.3 million + $879.1 million + $0 = $890.4 million.

So its **Current Enterprise Value is ~$9 billion**.

What do these numbers mean? On their own, not much.

You now have to **value the company according to your views of it** – in other words, you must calculate its *Implied* Enterprise Value and *Implied* Equity Value.

So you project the company's cash flows, and then you discount them back to their Present Value, using a variation of this formula:

Company Value = Cash Flow / (Discount Rate – Cash Flow Growth Rate)

Based on *your views* – the Growth Rate and Discount Rate you've used – the company's **Implied Enterprise Value is $10.5 billion**.

Then, you back into the company's Implied Equity Value by *adding* Cash, Investments, and non-core-business Assets and *subtracting* Debt and Preferred stock, so its Implied Equity Value = $10.5 billion + $1.9 billion – $890 million = **$11.5 billion**.

The company's Implied Share Price is then $11.5 billion / 1 billion shares, or $11.50 per share.

So your conclusion might be that the company's shares SHOULD be worth $11.50 each and that it's a good deal to buy them at $10.00 per share.

You came to those conclusions because you developed **your view** of the company and calculated its Implied Equity Value and Implied Enterprise Value, which were higher than its Current Equity Value and Current Enterprise Value.

What About Private Companies?

These examples have all used public companies with share prices and public filings.

If you're working with **private companies** – ones not listed on the stock market – not *that much* changes.

The concepts of Equity Value and Enterprise Value still apply, as does the distinction between Current Value and Implied Value.

The main difference is that you can't calculate Current Equity Value by using the company's share price and shares outstanding because its shares are not publicly traded.

So you have to rely on the valuation at which the company most recently raised money, the price at which it was most recently acquired, or some other external estimate to estimate its Current Equity Value.

As a result, you also can't calculate its Current Enterprise Value in a straightforward way.

In practice, you often *skip* Current Equity Value and Current Enterprise Value for private companies altogether and just use your views to estimate the Implied Equity Value and Implied Enterprise Value.

So if you're an investment banker advising a **public** company, you might make a comparison between the company's current share price and its *implied* share price – what you think it *should* be worth.

But if you're advising a **private** company, you would skip the comparison and simply tell the client what you think it *should* be worth.

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Key Rule #2: Implications of Equity Value and Enterprise Value

Consider the most famous equation in physics:

$E = mc^2$

E = energy, m = mass, and c = the speed of light in a vacuum (~300 million meters/second).

It's part of Einstein's theory of special relativity, and it says that **mass and energy are equivalent**.

It's a simple equation, but its **implications** are far-reaching: For one, it implies that even very small amounts of matter have enormous amounts of energy.

It also implies that you can **convert** matter into energy, which explains nuclear reactors and atomic bombs.

In the same way, **the definitions of Equity Value and Enterprise Value** have far-reaching implications.

We'll explore those implications in this section and then **bust some common myths** about these concepts.

Implication #1: Current Equity Value Cannot Be Negative, But Current Enterprise Value Can Be Negative

There are two ways to think about this one:

- **Way #1:** A company's **share price** cannot be negative, and its **share count** also cannot be negative. Its share price can be either $0.00 or positive, and its share count must be positive. So it's mathematically impossible for Current Equity Value to be negative.

- **Way #2:** A company's **Total Assets** cannot have a negative value. They might be *worthless* – i.e., worth exactly $0 – but Assets like Cash or Inventory could never be worth *less* than $0.

This same concept applies even to private companies: Could a tech or biotech startup raise money from venture capitalists at a *negative* valuation? No! It must be positive.

On the other hand, Current Enterprise Value could easily be negative. For example, what if the company's Current Equity Value is $100 million, but it has $200 million in Cash and no Debt?

Its Current Enterprise Value is **negative $100 million**.

This scenario is rare; it's most common for pre-bankruptcy companies that are burning through cash at high rates, and that may not be able to satisfy all their claims.

A Negative Enterprise Value lets you **buy cash at a discount**… assuming the company survives!

Implication #2: Both the IMPLIED Equity Value and IMPLIED Enterprise Value Can Be Negative

Remember that you use **your views** of a company to calculate its Implied Equity Value and Implied Enterprise Value.

So there's nothing that prohibits Implied Values from being negative.

For example, you believe a company's cash flows, currently at $100, will grow by 3% per year into eternity. But similar companies are returning 2% each year, on average. So the Discount Rate is 2%.

Company Value = Cash Flow / (Discount Rate – Cash Flow Growth Rate)

Company Value = $100 / (2% – 3%) = –$10,000

Assuming that this is the **cash flow to ALL investors** and that the Discount Rate is WACC, then the company's Implied Enterprise Value is negative $10,000.

If the company has $500 in Cash and no Debt, then its Implied Equity Value will also be negative.

You back into Implied Equity Value rather than calculating it with Shares Outstanding * Current Share Price, so there's no reason why it *can't* be negative.

Note that while this scenario is THEORETICALLY possible, it's extremely unlikely in real life unless you're analyzing distressed or highly speculative companies.

Implication #3: IN THEORY, Financing Events Will Not Affect Enterprise Value, But They May Affect Equity Value

If a company with an Equity Value of $1,000 and Enterprise Value of $1,200 issues $100 of Stock, what happens to both metrics?

You know from the Accounting lessons that issuing $100 of Stock results in $100 of additional Cash on the Assets side of the Balance Sheet and $100 in additional Common Stock & APIC on the L&E side.

So the company now has $100 in extra Assets, and those extra Assets were *funded* by Equity investors. **As a result, Equity Value increases by $100**.

To move from Equity Value to Enterprise Value, you subtract non-core-business Assets, and you add items that represent other investor groups.

Equity Value is $100 higher, but you subtract the extra $100 of Cash. There are no new, other investor groups to add.

So the changes cancel each other out, and **Enterprise Value stays the same**.

That is extremely important.

According to the finance theory behind it (the Modigliani–Miller theorem), **Enterprise Value will NOT be affected by these financing events**.

This theory doesn't hold up in real life because taxes, the risk of bankruptcy, agency costs, and inefficient markets all mean that financing changes *will* affect Enterprise Value.

But for purposes of interview questions about these changes, the same thing always happens: Cash changes, but then something on the L&E side of the Balance Sheet offsets the change so that Enterprise Value doesn't change.

Here are a few examples:

- **Raising Debt:** Won't impact Enterprise Value; Cash and Debt both increase and offset each other.
- **Repaying Debt:** Won't impact Enterprise Value; Cash and Debt both decrease and offset each other.
- **Raising Equity:** Won't impact Enterprise Value; Cash and Equity Value both increase and offset each other.
- **Repurchasing Shares:** Won't impact Enterprise Value; Cash and Equity Value both decrease and offset each other.
- **Issuing Dividends:** Won't impact Enterprise Value; Cash and Equity Value both decrease and offset each other.

Note that Equity Value **MAY BE AFFECTED**, but will not *necessarily* be affected by these events.

Please see the accompanying Excel file on how these financing events affect Equity Value and Enterprise Value for examples with real numbers.

Implication #4: IN THEORY, Only Changes to a Company's Core Business Will Affect Enterprise Value

"OK," you say, "That makes sense, but then what **DOES** affect Enterprise Value, either Current or Implied?"

You can answer this question by going back to the **definition:**

- **Enterprise Value:** The value of the company's **CORE BUSINESS OPERATIONS** (i.e., **ONLY** the Assets related to its core business), but to **ALL INVESTORS** (Equity, Debt, Preferred, and possibly others).

Enterprise Value changes only if the value of a company's core business operations (the Assets related to its core business) changes.

Here are a few examples of what could cause Enterprise Value, either Current or Implied, to change:

- **Example 1:** The company wins a major contract with a new customer, boosting its expected future Revenue.
- **Example 2:** The company's expansion strategy into Southeast Asia succeeds more quickly than expected, boosting its expected future Revenue.
- **Example 3:** The company closes down an unprofitable division, boosting its margins and its expected future cash flow.
- **Example 4:** The company negotiates a better supplier contract, boosting its margins and its expected future cash flow.

These changes all **improve the company's expected future cash flow**.

And these changes do **NOT** boost the cash flow just for one group of investors. **ALL the investors** – Debt, Equity, and Preferred – benefit.

So this is the **real** distinction between Equity Value and Enterprise Value:

Only changes to a company's underlying business affect its Enterprise Value, but *both* financial and operational changes affect its Equity Value.

But you can't just "ignore" Equity Value; you'll always look at both metrics when analyzing companies.

Finally, remember that this principle is true *in theory*. In real life, financial changes will affect Enterprise Value, but by far less than they affect Equity Value.

Implication #5: Metrics That Represent ONLY Equity Investors Pair with Equity Value, and Metrics That Represent ALL Investors Pair with Enterprise Value

We've already looked at metrics like **Return on Equity (ROE)** and **Return on Invested Capital (ROIC)**, but we didn't explain the calculations behind them.

For example, why do you use Net Income with Equity to calculate ROE, and also with Assets to calculate ROA?

You should know part of the answer now: A company's **Total Assets** match up with that company's **Equity** and **Equity Value**.

That's from the definition of Equity Value: It represents the value of **ALL** the company's Assets but **ONLY** to Equity investors.

But why Net Income?

Think about it in terms of "who gets paid" at each step along a company's Income Statement.

Initially, a company's Revenue, Gross Profit, and Operating Income are available to **all investors in the company**.

When any of those increases, everyone benefits. For example, higher sales make it easier for the company to pay interest on Debt, to pay Preferred Dividends, and to pay Common Dividends to the shareholders.

But as you **move down the Income Statement**, **you start eliminating different investor groups** as they receive payment, and you start reflecting income and expenses from non-core-business Assets:

COACH, INC.
CONSOLIDATED STATEMENTS OF INCOME

Net sales	$	4,191.6
Cost of sales		1,283.0
Gross profit		2,908.6
Selling, general and administrative expenses		2,290.6
Operating income		618.0
Interest (expense) income, net		(6.4)
Other expense		—
Income before provision for income taxes		611.6
Provision for income taxes		209.2
Net income	$	402.4
Net income per share:		
Basic	$	1.46
Diluted	$	1.45
Shares used in computing net income per share:		
Basic		275.7
Diluted		277.2
Cash dividends declared per common share	$	1.350

Everything up here is available to **ALL** investors and benefits everyone, so these items all pair with Enterprise Value.

The **Debt** investors "get paid" here with this Interest. After they receive this Interest, nothing else on the Income Statement is available for them.

Other Income / (Expense) is based on the **non-core-business Assets** a company has. So once we factor this in, it means that *anything* below it has to correspond to All Assets and Equity Value.

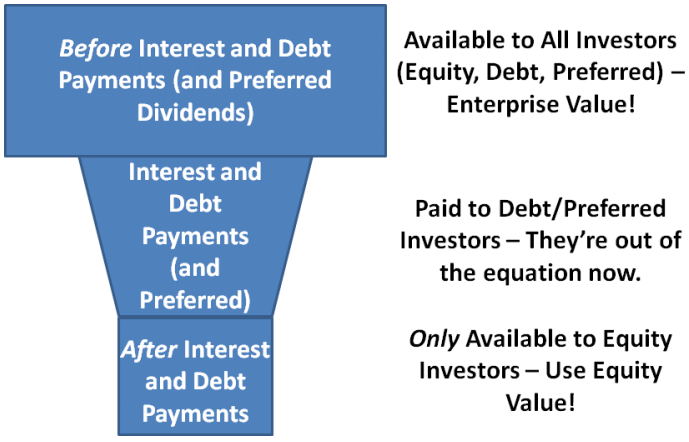
And this is **why** Net Income corresponds to Equity Value: Debt and Preferred Investors have been paid by this point, so they're out of the picture. But we've also included income and expenses from non-core-business Assets right above!

If the company had Preferred Stock here, there would be an entry for Preferred Stock Dividends right below Net Income.

Then, the company would subtract the Preferred Dividends from Net Income to calculate **Net Income to Common** at the bottom.

And you'd have to use this **Net Income to Common** figure for all the metrics and multiples you calculate based on Net Income.

You can think of this concept using the funnel structure on the right:



If a metric does *not* yet reflect Interest Expense and Preferred Dividends, i.e. neither one has been *subtracted* yet, then you pair it with **Enterprise Value**.

If a metric **does** reflect Interest Expense and Preferred Dividends, i.e. they have both been *subtracted*, then you pair it with **Equity Value**.

After both of those have been subtracted, the remaining cash flow is available **only** to the Equity Investors, which is why any metric like this pairs with Equity Value.

The most common metrics that pair with **Enterprise Value** include:

- Revenue
- Operating Income or EBIT
- Net Operating Profit After Taxes (NOPAT), defined as EBIT * (1 – Tax Rate)
- EBITDA
- Unlevered Free Cash Flow (UFCF) or Free Cash Flow to Firm (FCFF) – Cash flow that's available to **ALL** investors

The most common metrics that pair with **Equity Value** include:

- Net Income (or Net Income to Common if there are Preferred Dividends)
- Free Cash Flow (CFO – CapEx)
- Levered Free Cash Flow (CFO – CapEx – Mandatory Debt Repayments)

Myths About Equity Value and Enterprise Value

Before moving on, let's destroy some common myths about Equity Value and Enterprise Value that you'll see on Investopedia, Wikipedia, online forums, and other so-called "sources."

MYTH #1: Enterprise Value is the "Cost to Acquire a Company"

NO! As stated above, **Enterprise Value** is the value of a company's core business operations to *all* the investors in the company.

When a company wants to acquire 100% of another company, *at the minimum*, it must pay for all the other company's shares outstanding.

So the minimum purchase price is the other company's Equity Value.

Past that, it gets tricky because not all acquisitions treat Debt and Cash in the same way.

In most cases, the seller must "refinance" Debt (i.e., replace it with new Debt, or pay it off entirely) if there's a "change of control" and someone else ends up owning the company.

However, this same condition isn't necessarily true of the other Debt-like items that you add when moving from Equity Value to Enterprise Value.

Also, the acquirer doesn't necessarily "get" all the seller's Cash for itself because the seller still needs a certain minimum amount for operational purposes.

Finally, the acquirer may have to pay additional fees associated with the deal that are not reflected in the seller's Enterprise Value at all.

MYTH #2: Enterprise Value is the "True Value" of a Company

This statement might seem true at first, but it's missing one critical component: **To whom?**

Enterprise Value might be considered the "true value" of a company **to all the investors combined**, but if you're a common shareholder, it's certainly *not* the true value to you.

Going back to the home-buying analogy with the $250K mortgage and $250K down payment, how much is that new house worth to you?

You might be tempted to say, "$500K," but think about what would happen if you went to sell the house right after you bought it.

You'd only get $250K for it because you'd have to repay the $250K mortgage. So even if the home sells for $500K total, *you* only get $250K out of it.

MYTH #3: Debt "Adds" to Enterprise Value, and Cash "Subtracts" from Enterprise Value

No, no, no, and triple no.

Debt doesn't "add to" a company's Enterprise Value. *You add Debt* when you move from a company's Equity Value – Current or Implied – to its Enterprise Value – Current or Implied.

Similarly, Cash doesn't "subtract from" a company's Enterprise Value.

You subtract Cash when you move from a company's Equity Value – Current or Implied – to its Enterprise Value – Current or Implied.

This may seem like a meaningless distinction, **but the difference is huge**.

If you say that Debt "adds to" Enterprise Value, you're implying that raising Debt can *change* a company's Enterprise Value – **which is not true!**

So if you get this distinction wrong, you'll incorrectly think that issuing Debt or Equity changes a company's Enterprise Value.

But they do not!

According to the definition, only **changes to a company's core business operations** affect its Enterprise Value – not financing changes.

(And again, in reality, there will still be a small impact from financing changes, but far less of an impact than there is on Equity Value.)

MYTH #4: You Subtract Cash When Calculating Enterprise Value Because It's "The Opposite" of Debt

No, no, no, and no.

You subtract Cash when moving from Equity Value to Enterprise Value because it is a non-core-business Asset.

In other words, the company doesn't *need* its cash balance to continue operating and selling products to customers.

On the other hand, it **does** need its Inventory and its PP&E to continue doing these activities – so you don't add or subtract those items.

Technically, you should subtract only the *excess* cash balance, but in practice, everyone simplifies this and subtracts the entire balance.

Finally, there's one other reason why Cash is not "the opposite" of Debt: **Many forms of Debt do not allow early repayment**.

So even if a company has a huge Cash balance, it can't necessarily use it to repay Debt.

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Key Rule #3: Valuation Multiples with Equity Value & Enterprise Value

Equity Value and Enterprise Value are useful when you create a long-term cash flow analysis for a company (i.e., a Discounted Cash Flow or DCF analysis), and you want to compare the company's *Implied* Value to its *Current* Value.

But they're **not** that useful for comparing different companies.

For example, consider these two companies:

- **Company A** – Current Equity Value of $500 million; Current Enterprise Value of $800 million.
- **Company B** – Current Equity Value of $100 million; Current Enterprise Value of $300 million.

Which company is more valuable?

You'd probably say Company A because its Current Equity Value and Current Enterprise Value are both higher.

But it's not a fair comparison because Company A could also be much bigger than Company B.

For example, what if Company A has $100 million in EBITDA and $300 million in Revenue, and Company B has $10 million in EBITDA and $30 million in Revenue?

If you take both companies' Enterprise Values and *divide them* by these metrics, you get these results:

- **Company A** – EV / EBITDA = 8.0x; EV / Revenue = 2.7x.
- **Company B** – EV / EBITDA = 30.0x; EV / Revenue = 10.0x.

So which company is more valuable now?

This concept is similar to how one house's asking price might be $2 million, and another's might be $500K.

By itself, that doesn't mean anything because **one house might be a lot bigger than the other**.

What matters are the **per-square-foot** or **per-square-meter** values.

If the $2 million house has 20,000 square feet, its asking price is $100 per square foot.

And if the $500K house has 2,500 square feet, its asking price is $200 per square foot.

Which one seems more expensive now?

Of course, even those numbers may not tell the whole story.

For example, what if the $100-per-square-foot home is in an area with gang violence, while the $200-per-square-foot home is in a safe area with no crime?

Sure, the $100-per-square-foot home is "cheaper," but would you want to live there?

It works the same way with companies: **To compare them, you need to create "multiples" that show company values on a per-unit basis**.

And just like with houses, these multiples are a *starting point* for the analysis but don't tell you the full story.

Here are a few examples of common valuation multiples:

- **EV / Revenue** – Enterprise Value / Revenue
- **EV / EBIT** – Enterprise Value / EBIT
- **EV / EBITDA** – Enterprise Value / EBITDA
- **P / E** – Equity Value / Net Income or Price per Share / Earnings per Share

Just like you can't compare the price of a home in Beverly Hills (a wealthy area of Los Angeles) to one in Compton (another part of LA with significantly more crime), you also can't compare companies of vastly different sizes in different industries.

The companies must be similar for a comparison of multiples to be meaningful.

So if you're looking at a set of mid-size European manufacturing companies with EBITDA between €100 million and €500 million, multiples like EV / EBITDA and P / E are meaningful.

But you can't compare a pre-revenue biotech startup to Pfizer – it's meaningless because the companies are so different.

The rest of this section will focus on **how to pair financial metrics together** to create multiples, and what multiples **mean**.

How Do You Pair the Financial Metrics?

We covered this concept in the "Implications" section above, but the basic idea is as follows: Think about "who gets paid" at each step down a company's Income Statement.

As you **move down the Income Statement**, you start eliminating different investor groups as they receive payment, and you start reflecting the impact of non-core-business Assets:

COACH, INC.
CONSOLIDATED STATEMENTS OF INCOME

Net sales	$	4,191.6
Cost of sales		1,283.0
Gross profit		2,908.6
Selling, general and administrative expenses		2,290.6
Operating income		618.0
Interest (expense) income, net		(6.4)
Other expense		—
Income before provision for income taxes		611.6
Provision for income taxes		209.2
Net income	$	402.4
Net income per share:		
Basic	$	1.46
Diluted	$	1.45
Shares used in computing net income per share:		
Basic		275.7
Diluted		277.2
Cash dividends declared per common share	$	1.350

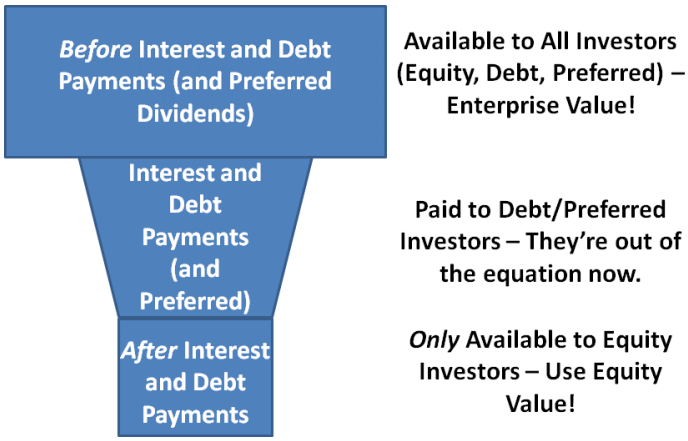
Everything up here is available to **ALL** investors and benefits everyone, so these items all pair with Enterprise Value.

The **Debt** investors "get paid" here with this Interest. After they receive this Interest, nothing else on the Income Statement is available for them.

Other Income / (Expense) is based on the **non-core-business Assets** a company has. So once we factor this in, it means that *anything* below it has to correspond to All Assets and Equity Value.

And this is **why** Net Income corresponds to Equity Value: Debt and Preferred Investors have been paid by this point, so they're out of the picture. But we've also included income and expenses from non-core-business Assets right above!

You can think of this concept using the funnel structure on the right:



If a metric does *not* yet reflect Interest Expense and Preferred Dividends, i.e. neither one has been *subtracted* yet, then you pair it with **Enterprise Value**.

If a metric **does** reflect Interest Expense and Preferred Dividends, i.e. they have both been *subtracted*, then you pair it with **Equity Value**.

After both of those have been subtracted, the remaining cash flow is available **only** to the Equity Investors, which is why any metric like this pairs with Equity Value.

But there's more to this concept: More broadly, you want to make **apples-to-apples** comparisons.

If the NUMERATOR – Equity Value or Enterprise Value – includes the value of a Balance Sheet item, you should NOT include its corresponding income or expenses in the DENOMINATOR.

And if the NUMERATOR does NOT include the value of a Balance Sheet item, you SHOULD include its corresponding income or expenses in the DENOMINATOR.

This rule explains why you **exclude** Interest Expense when you calculate a multiple such as EV / EBITDA or EV / EBIT: Enterprise Value already includes Debt, so you **exclude** the expense associated with Debt – Interest – in the denominators.

If the company has Preferred Stock, this rule also explains why it's so important to use **Net Income to Common** rather than Net Income: Equity Value does **NOT** include the Preferred Stock, so for the denominator, you should use a metric where the Preferred Dividends have been **included** (i.e., subtracted out).

This rule also works for less common metrics such as EBITDAR (EBITDA before Rental Expense, used for comparing retailers that own vs. rent their stores).

If you use EBITDAR, the numerator – Enterprise Value – **MUST** reflect the Balance Sheet value associated with the Rental Expense.

But there is nothing on the Balance Sheet associated with a simple operating lease, so you have to **capitalize** the Rental Expense (usually using a simple rule, such as 7x or 8x the annual payment) and *add it* to Enterprise Value.

The numerator becomes Enterprise Value + Capitalized Operating Leases.

When in doubt, think about **what you're excluding** and **what you're including** in the denominator to figure out what should go in the numerator.

Don't Use "Half-Pregnant" Multiples

Could you ever be **half-pregnant** in real life? No!

You're pregnant, or you're not pregnant.

In the same way, you should **avoid using multiples that correspond to something "halfway" between Equity Value and Enterprise Value**.

For example, let's say a company has Equity, Debt, Cash, and Preferred Stock.

Its Income Statement has all the standard items, including Operating Income, Net Income, and Net Income to Common.

In this scenario, you could use Equity Value and pair it with Net Income to Common.

Equity Value *does not include* Debt or Preferred Stock, and Net Income to Common *includes* Interest Expense and Preferred Dividends.

However, you should NOT use *just* Net Income and pair it with Equity Value + Debt – Cash.

Technically, this pairing satisfies the rule **because the numerator and denominator match up** – but it will be *very* confusing to anyone looking at your work.

What exactly does Equity Value + Debt – Cash (with no Preferred Stock addition) mean?

Is that "Half Enterprise Value?" "Special Enterprise Value?" "Kardashian Enterprise Value?"

Equity Value and Enterprise Value are standard numbers that everyone knows how to calculate, so you shouldn't deviate from them for the sake of "doing something different."

The *only* exception to this rule against "half-pregnant" multiples comes when you're using a metric like EBITDAR that's a slight variation on a standard metric (EBITDA).

In this case, you *do* have to use something slightly different from Enterprise Value because you capitalize the company's Rent and add it to Enterprise Value to satisfy the rule above.

HOWEVER, this new numerator is **not** "halfway" between Equity Value and Enterprise Value.

It's more like: "Enterprise Value, plus some other things."

And that's the point: **Use Equity Value or Enterprise Value, or use Enterprise Value *plus* other items, but don't use numerators that are "in between" Equity Value and Enterprise Value**.

What a Multiple Really Is: Shorthand for Valuation

In the section above, we mentioned how a "multiple" could be compared to the per-square-foot value of a house.

But there's another way to think of multiples: **shorthand for valuation**.

A valuation multiple is a short way to say, "If this company's Cash Flow is A, and it's growing at a rate of B, and the Discount Rate is C, then the company is worth $X."

Let's go back to our favorite formula:

Company Value = Cash Flow / (Discount Rate – Cash Flow Growth Rate)

And let's say a company has $100 in Cash Flow and that it's not growing at all.

In this case:

How Much is a Company Worth? - Scenario 1 - No Growth:

Discount Rate:	10.0%	
FCF Growth Rate:	0.0%	
Initial Free Cash Flow:	$ 100	
Present Value of FCFs:	**$ 1,000**	**PV** = Initial Free Cash Flow / Discount Rate
And as Calculated by Excel...	**$ 1,000**	

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Free Cash Flow:	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100

Valuation Multiple:	**10.0 x**

So this **multiple of 10x** represents the fact that we'd be willing to pay 10x the company's annual Free Cash Flow to buy the company.

Since Company Value = $100 / 10% = $1,000, the Valuation Multiple = $1,000 / $100 = 10x.

Now let's say there's 3% growth each year:

How Much is a Company Worth? - Scenario 2 - Growth:

Now, let's say the company's cash flows are actually *growing* each year... could you pay MORE or LESS to get that SAME yield?

Answer: More! Because there's growth, so you can **afford** to pay MORE upfront and get that same 10% yield you're targeting.

Discount Rate:	10.0%	
FCF Growth Rate:	3.0%	
Initial Free Cash Flow:	$ 100	
Present Value of FCFs:	**$ 1,429**	**PV** = Initial Free Cash Flow / (Discount Rate - FCF Growth Rate)
And as Calculated by Excel...	**$ 1,427**	

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Free Cash Flow:	$ 100	$ 103	$ 106	$ 109	$ 113	$ 116	$ 119	$ 123

Valuation Multiple:	**13.9 x**
Numerator Increases By:	42.9%
Denominator Increases By:	3.0%

In this case, Company Value = $100 / (10% – 3%) = $1,429, so the Valuation Multiple = $1,429 / $103 = **13.9x.**

We're using the Year 2 Free Cash Flow because multiples are based on *future* expectations.

The higher multiple indicates that you'd be willing to pay more for the company if its cash flows were growing more quickly.

And now let's say the company were growing even more quickly – at 5% rather than 3%:

How Much is a Company Worth? - Scenario 3 - More Growth:

Discount Rate:	10.0%	
FCF Growth Rate:	5.0%	
Initial Free Cash Flow:	$ 100	
Present Value of FCFs:	**$ 2,000**	**PV** = Initial Free Cash Flow / (Discount Rate - FCF Growth Rate)
And as Calculated by Excel...	**$ 1,981**	

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Free Cash Flow:	$ 100	$ 105	$ 110	$ 116	$ 122	$ 128	$ 134	$ 141

Valuation Multiple:	**19.0 x**
Numerator Increases By:	40.0%
Denominator Increases By:	1.9%

The multiple increases once again!

Since the Company Value = $100 / (10% – 5%) = $2,000, the Valuation Multiple = $2,000 / $105 = **19x**.

Like many of these concepts, this one does not *exactly* hold up in real life.

One problem is that valuation multiples are usually based on Income Statement metrics like Revenue, EBIT, EBITDA, and Net Income, whereas a company's value depends on its *Cash Flow* and *Cash Flow Growth Rate*.

So when there are big discrepancies between cash flow and metrics such as EBIT and EBITDA, you'll get behavior that doesn't match this concept.

Another problem is that this rule assumes the Discount Rate stays the same.

But the Discount Rate is quite subjective. *Even if* you've picked companies of similar sizes in the same industry, the Discount Rate may not be the same, or even similar, for all of them.

For example, maybe you've picked U.S.-based retailers with revenue between $200 and $500 million for your set of comparable companies.

That seems reasonable, but are they *all* truly comparable? What if one company is spending half as much on CapEx, but growing at the same rate as the others?

Or what if one retailer specializes in a geography or sub-industry that is declining?

In those cases, the individual companies' Discount Rates might differ substantially.

Finally, non-financial factors also influence valuation multiples.

For example, what if a company just reported earnings far below expectations because of a recent lawsuit?

The company's stock price would likely plummet, reducing its valuation multiples, *even though nothing about its expected performance has changed*.

Or what if one company just recruited a top executive from a competitor, or announced plans to develop a new product that might take the market by storm?

Those factors are difficult to quantify in a company's cash flow or cash flow growth rate, but they could all affect its multiples.

The general rule is: **If two companies are very similar, but one company is trading at higher multiples, the company with higher multiples has a higher expected cash flow growth rate**.

However, there are many exceptions and special cases where that rule doesn't hold up – and that's why it is a "rule of thumb" rather than a law of nature.

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Key Rule #4: Why "Enterprise Value" is a Pink Unicorn

Ready to take the **red pill**?

In a previous section, we explained why Enterprise Value is not affected by changes in financing, but why Equity Value is affected by both operational and financial changes.

But that's not quite true.

It *is* true that Enterprise Value will be **LESS** impacted by financing events than Equity Value, but in real life, there will still be **SOME** impact from financing changes.

The reasoning goes back to that all-important formula:

Company Value = Cash Flow / (Discount Rate – Cash Flow Growth Rate)

Let's say that "Cash Flow" is "Unlevered Free Cash Flow," or Free Cash Flow to Firm, meaning that it's available to **ALL** the investors in the company.

As a result, you use WACC, or the Weighted Average Cost of Capital, for the Discount Rate, and Company Value will be the company's Implied Enterprise Value:

Implied Enterprise Value = Unlevered FCF / (WACC – Unlevered FCF Growth Rate)

A company has Unlevered FCF of $100, and it's growing by 3% per year. WACC is 10.0%.

If the company now raises additional Debt or Equity, repays Debt, or repurchases shares, its WACC will change.

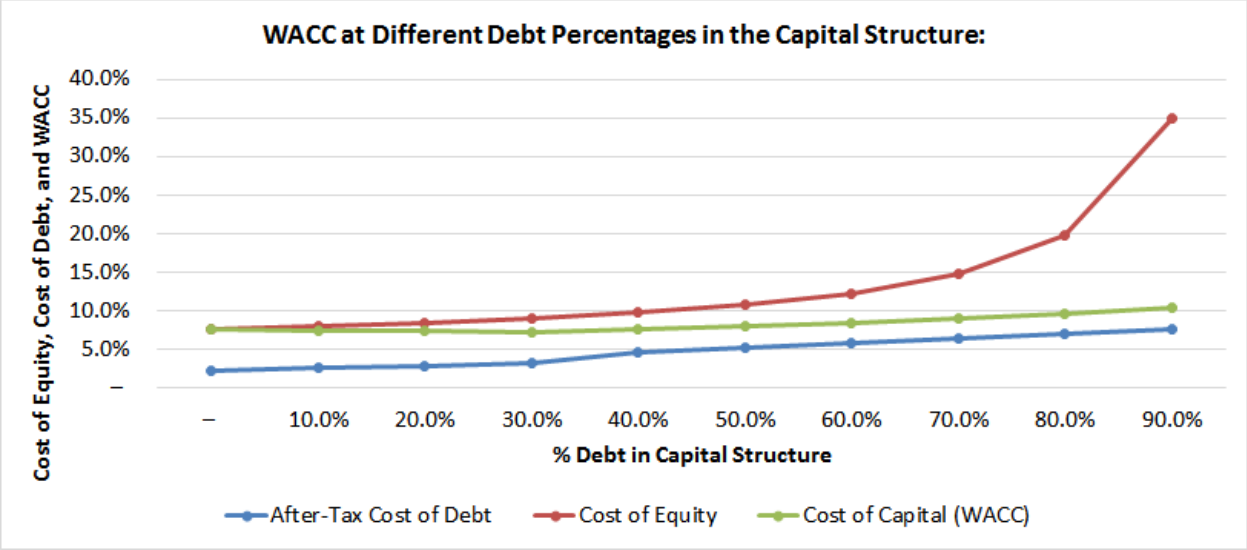
Remember that WACC is equal to the "cost" of each part of a company's capital structure times the percentage of capital in that part:

WACC = Cost of Equity * % Equity + Cost of Debt * % Debt + Cost of Preferred * % Preferred

So if a company has different amounts of Debt, Equity, or Preferred Stock, those percentages will all change – and therefore WACC will change.

But there's more to it than that. **At different levels of Debt and Equity, the *Costs* of Debt and Equity also start to change!** (We'll ignore Preferred Stock in the next part for simplicity)

Here's a graph of how WACC might change at different levels of Debt and Equity:



These percentages are just **guesstimates** – they're not "based on" any particular formula, but on what happens in real life as companies take on more Debt.

Debt investors have lower returns expectations than Equity investors since they can only earn a fixed, or relatively fixed, interest rate on the Debt; also, to the company, the Interest Expense is tax-deductible.

For these reasons, we can say that Debt is "cheaper" than Equity.

Since Debt is cheaper than Equity, more Debt will reduce WACC… up to a certain point.

But once the company's Debt / Total Capital Ratio goes above a certain level, **the Costs of both Debt and Equity will start to increase**.

With more Debt, the company stands a higher chance of going bankrupt – which increases the risk for *all* the investors.

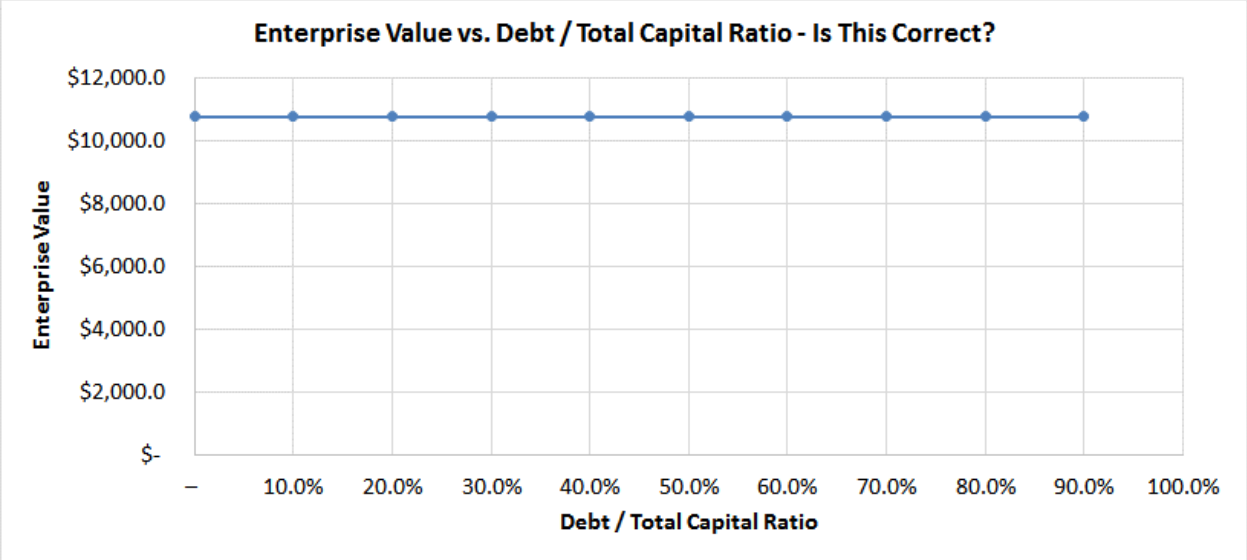
Here's a table so you can see the data in the graph above:

How Different Factors Impact WACC, the Cost of Debt, and the Cost of Equity:

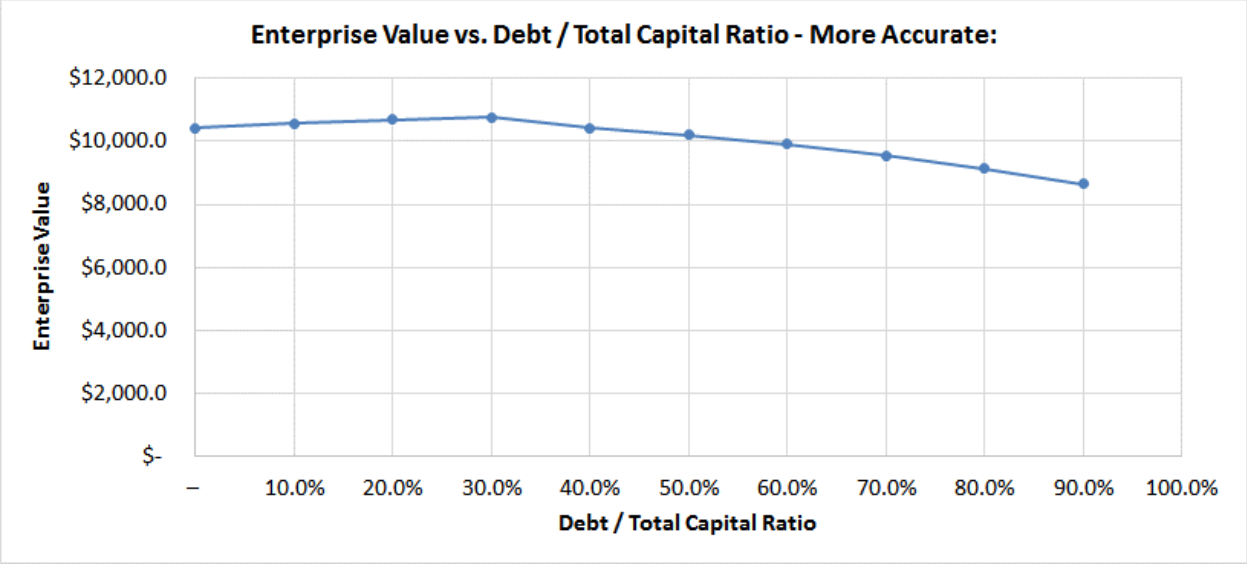
Debt / Total Cap.:	Debt / Equity:	Relevered Beta:	Risk Spread:	Cost of Debt: Pre-Tax:	Cost of Debt: After-Tax:	Cost of Equity:	Implied WACC:
–	–	0.72	1.0%	3.6%	2.2%	7.7%	7.7%
10.0%	11.1%	0.77	1.5%	4.1%	2.5%	8.0%	7.4%
20.0%	25.0%	0.83	2.0%	4.6%	2.8%	8.4%	7.3%
30.0%	42.9%	0.90	2.5%	5.1%	3.1%	8.9%	7.2%
40.0%	66.7%	1.01	5.0%	7.6%	4.6%	9.7%	7.6%
50.0%	100.0%	1.15	6.0%	8.6%	5.2%	10.7%	7.9%
60.0%	150.0%	1.37	7.0%	9.6%	5.8%	12.2%	8.3%
70.0%	233.3%	1.73	8.0%	10.6%	6.4%	14.7%	8.9%
80.0%	400.0%	2.44	9.0%	11.6%	7.0%	19.7%	9.5%
90.0%	900.0%	4.60	10.0%	12.6%	7.6%	34.8%	10.3%

So what does that mean for the **Implied Enterprise Value?**

It means that the following graph for Implied Enterprise Value at different levels of Debt and Equity is **not quite accurate**:



In reality, the graph would look more like this one:



The company's Implied Enterprise Value **doesn't change that much** over reasonable levels of Debt – but it starts to change rapidly at much higher Debt percentages.

Here's an example of what might happen when you calculate the Implied Enterprise Value, and you use different assumptions for a company's capital structure:

Debt / Total Capital:	Debt / Equity:	Relevered Beta:	Risk Spread:	Cost of Debt: Pre-Tax:	Cost of Debt: After-Tax:	Cost of Equity:	Implied WACC:	"Accounting" Enterprise Value:	Implied Enterprise Value:
–	–	0.72	1.0%	3.6%	2.2%	7.7%	7.7%	$ 10,770.6	$ 10,413.3
10.0%	11.1%	0.77	1.5%	4.1%	2.5%	8.0%	7.4%	10,770.6	10,576.3
20.0%	25.0%	0.83	2.0%	4.6%	2.8%	8.4%	7.3%	10,770.6	10,696.1
30.0%	42.9%	0.90	2.5%	5.1%	3.1%	8.9%	7.2%	10,770.6	10,770.6
40.0%	66.7%	1.01	5.0%	7.6%	4.6%	9.7%	7.6%	10,770.6	10,431.4
50.0%	100.0%	1.15	6.0%	8.6%	5.2%	10.7%	7.9%	10,770.6	10,214.3
60.0%	150.0%	1.37	7.0%	9.6%	5.8%	12.2%	8.3%	10,770.6	9,918.1
70.0%	233.3%	1.73	8.0%	10.6%	6.4%	14.7%	8.9%	10,770.6	9,552.0
80.0%	400.0%	2.44	9.0%	11.6%	7.0%	19.7%	9.5%	10,770.6	9,126.8
90.0%	900.0%	4.60	10.0%	12.6%	7.6%	34.8%	10.3%	10,770.6	8,654.4

The company gets riskier and riskier for *all* investors as it takes on more Debt.

Initially, the Discount Rate decreases as the company uses more Debt, but past a certain point, more Debt starts *increasing* risk and therefore *increasing* the Discount Rate.

If you pretend that the Discount Rate does NOT change as the company uses more Debt, you get these results.

But in reality, the Discount Rate WILL change, so these results are more accurate.

This concept applies more readily to the *Implied* Enterprise Value than to *Current* Enterprise Value.

If a company raises more Debt in real life, its Current Enterprise Value will probably *not* change overnight. But if it is expected to have more Debt going forward, its Current Enterprise Value will start to change.

Here's why the Costs of Debt and Equity start to change with different capital structures, and why capital structure, therefore, impacts Enterprise Value:

1. **Taxes** – Interest paid on Debt is tax-deductible, but Common Dividends and Preferred Dividends are not. Since the tax treatments differ, Enterprise Value is **NOT** affected in the same way by additional Debt vs. additional Equity.

2. **Bankruptcy Risk** – Debt and some types of Preferred Stock increase the chances of a company going bankrupt because of the Interest Expense (or mandatory dividends) and the requirement to repay the principal in the future. If a company raises Equity, there's no additional risk of bankruptcy because it won't owe cash payments to anyone.

3. **Agency Costs** – Debt investors want to earn their interest and receive their money back at the end. But Equity investors want the company to **grow** because they have **unlimited upside**. But since Debt investors cannot earn *more than* the interest rate, they want the company to be as conservative as possible and just focus on paying them back. These conflicting agendas mean that Debt is **not** equivalent to Equity.

4. **Efficient Markets** – This idea that Debt, Equity, and Preferred Stock are equivalent assumes that the markets are efficient and that companies' share prices always incorporate and reflect all relevant information. These assumptions are often wrong, especially for smaller, less-well-known companies.

The Bottom Line: This section is not meant to "disprove" the concept of Enterprise Value.

Enterprise Value is critical because it *does* represent the value of a company's core business operations to all the investors in the company.

Our point is that it's not *really* "capital structure-neutral," as some sources claim.

So instead of thinking about it as: "Changes to a company's capital structure may affect its Equity Value, but not its Enterprise Value," it's better to think of it as:

"Changes to a company's capital structure may affect its Equity Value by significantly *more* than they affect its Enterprise Value."

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Key Rule #5: How Events Impact Enterprise Value and Equity Value

Common interview questions about Enterprise Value and Equity Value include the following:

- "What happens to a company's Enterprise Value and its EV / EBITDA if it raises $100 of Debt?"
- "What happens to a company's Equity Value and its P / E multiple if it issues $100 in Dividends?"
- "A company has excess Cash. How do its Equity Value and Enterprise Value change if it chooses to repurchase shares vs. repay Debt?"
- "A CEO finds $100 of Cash on the street and adds it to the company's bank account. How do Equity Value and Enterprise Value change?"

These questions are easy to answer if you remember the definitions of Equity Value and Enterprise Value:

- **Equity Value** = Value of Core-Business Assets + Value of Non-Core-Business Assets
- **Enterprise Value** = Value of Core-Business Assets

- **Equity Value** = Value to Equity Investors
- **Enterprise Value** = Value to Equity Investors + Value to Debt Investors + Value to Preferred Investors (and possibly others)

To assess what happens to the valuation multiples, remember that **only the numerator changes IMMEDIATELY after**.

Let's take the example of the CEO finding $100 of extra cash. Here's the reasoning:

Cash is a non-core-business Asset.

But when a company "gets" a new Asset, you have to attribute it to a *source of funding* on the L&E side of the Balance Sheet.

In this case, the funding source is the company's "internal operations."

Since a company's Equity on the Balance Sheet represents *what it has saved up internally*, Equity on the Balance Sheet increases.

Equity Value includes the value of core-business Assets plus non-core-business Assets, but only to common shareholders, so Equity Value increases.

It increases not just because Cash is a non-core-business Asset, but also because *the increase was attributed to Equity on the Balance Sheet*.

Enterprise Value includes only core-business Assets, but to all investors. This Cash is **not** a core-business Asset, and it also doesn't represent any investor group outside of equity investors.

Therefore, Enterprise Value stays the same.

Any multiples based on Enterprise Value, such as EV / Revenue, EV / EBITDA, and EV / EBIT, also stay the same.

The P / E multiple will increase because the **numerator** – Equity Value – increases, but the denominator stays the same.

"Finding extra cash" is like buying a house, finding extra tools or supplies you don't need, and then deciding that you'll sell them right away.

Yes, they increase the "list price" of the house, but you're going to sell them immediately after you buy the house, so **the core value of the house does not change**.

The house's core value would change only if you "find" an extra room, a sturdier foundation, or something else that makes the house itself more valuable (which is a bit absurd – how could you just "find" an extra room?).

And it's the same with a company: Its Enterprise Value changes only if something related to its core business, such as its customers, employees, or ability to make and sell products, changes.

When you answer these questions, you should also point out that there's a difference between **theory** and **reality**.

Vivendi SA - Equity Value, Enterprise Value, and Financial Data:	
Company Name:	Vivendi SA
Current Share Price:	€ 18.76
Basic Shares Outstanding (Millions):	1,343
Diluted Shares Outstanding (Millions):	1,352
Diluted Equity Value:	**€ 25,356**
(-) Cash & Cash-Equivalents:	(868)
(-) Other Investments:	(659)
(-) Equity Investments:	(290)
(-) Other Non-Core Assets, Net:	(17,983)
(-) Value of Net Operating Losses:	-
(+) Total Debt:	12,243
(+) Preferred Stock:	-
(+) Noncontrolling Interests:	1,659
(+) Unfunded Pension Obligations:	674
(+) Capital Leases:	-
(+) Restructuring & Legal Liab.:	2,849
Enterprise Value:	**€ 22,981**
Last Twelve Month (LTM) Revenue:	€ 11,858
Last Twelve Month (LTM) EBITDA:	2,099
Last Twelve Month (LTM) Net Income:	755
LTM EV / Revenue:	1.9 x
LTM EV / EBITDA:	10.9 x
LTM P / E (Equity Value / Net Income):	33.6 x

In theory, Enterprise Value and Enterprise Value-based multiples will not change after financing events take place.

In reality, they will change a bit, but by *far less* than Equity Value and Equity Value-based multiples.

Here are a few examples of common questions and answers, using Vivendi (a French telecom/media conglomerate) as the example company.

Its Equity Value and Enterprise Value initially look like the diagram on the left-hand side of this text.

At this point, the company was planning to divest several divisions, which explains the very high "Other Non-Core Assets, Net" figure.

Raising and Paying Off Debt

What if It Raises EUR 1,000 in Debt?	
Cash Changes By:	1,000
Debt Changes By:	1,000
Equity Changes By:	-
Preferred Stock Changes By:	-
Diluted Equity Value:	**€ 25,356**
(-) Cash & Cash-Equivalents:	(1,868)
(-) Other Investments:	(659)
(-) Equity Investments:	(290)
(-) Other Non-Core Assets, Net:	(17,983)
(-) Value of Net Operating Losses:	-
(+) Total Debt:	13,243
(+) Preferred Stock:	-
(+) Noncontrolling Interests:	1,659
(+) Unfunded Pension Obligations:	674
(+) Capital Leases:	-
(+) Restructuring & Legal Liab.:	2,849
Enterprise Value:	**€ 22,981**
LTM EV / Revenue:	1.9 x
LTM EV / EBITDA:	10.9 x
LTM P / E:	33.6 x

What if It Repays EUR 1,000 of Debt?	
Cash Changes By:	(1,000)
Debt Changes By:	(1,000)
Equity Changes By:	-
Preferred Stock Changes By:	-
Diluted Equity Value:	**€ 25,356**
(-) Cash & Cash-Equivalents:	132
(-) Other Investments:	(659)
(-) Equity Investments:	(290)
(-) Other Non-Core Assets, Net:	(17,983)
(-) Value of Net Operating Losses:	-
(+) Total Debt:	11,243
(+) Preferred Stock:	-
(+) Noncontrolling Interests:	1,659
(+) Unfunded Pension Obligations:	674
(+) Capital Leases:	-
(+) Restructuring & Legal Liab.:	2,849
Enterprise Value:	**€ 22,981**
LTM EV / Revenue:	1.9 x
LTM EV / EBITDA:	10.9 x
LTM P / E:	33.6 x

With these changes, nothing happens to Enterprise Value because the higher or lower Cash balance offsets the change in Debt.

Equity Value does not change because issuing and repaying Debt does not impact a company's Equity in any way.

So no multiples here change.

Issuing and Repurchasing Shares

These changes are also straightforward because they impact **Equity Value** and **Cash**, but nothing else.

Issuing shares will shift more of the company's capital structure to Equity, but will not affect Enterprise Value.

As a result, the P/E multiples change, but the Enterprise Value-based ones do not.

What if It Issues EUR 1,000 of Shares?	
Cash Changes By:	1,000
Debt Changes By:	-
Equity Changes By:	1,000
Preferred Stock Changes By:	-
Diluted Equity Value:	**€ 26,356**
(-) Cash & Cash-Equivalents:	(1,868)
(-) Other Investments:	(659)
(-) Equity Investments:	(290)
(-) Other Non-Core Assets, Net:	(17,983)
(-) Value of Net Operating Losses:	-
(+) Total Debt:	12,243
(+) Preferred Stock:	-
(+) Noncontrolling Interests:	1,659
(+) Unfunded Pension Obligations:	674
(+) Capital Leases:	-
(+) Restructuring & Legal Liab.:	2,849
Enterprise Value:	**€ 22,981**
LTM EV / Revenue:	1.9 x
LTM EV / EBITDA:	10.9 x
LTM P / E:	34.9 x

What if It Repurchases EUR 1,000 of Shares?	
Cash Changes By:	(1,000)
Debt Changes By:	-
Equity Changes By:	(1,000)
Preferred Stock Changes By:	-
Diluted Equity Value:	**€ 24,356**
(-) Cash & Cash-Equivalents:	132
(-) Other Investments:	(659)
(-) Equity Investments:	(290)
(-) Other Non-Core Assets, Net:	(17,983)
(-) Value of Net Operating Losses:	-
(+) Total Debt:	12,243
(+) Preferred Stock:	-
(+) Noncontrolling Interests:	1,659
(+) Unfunded Pension Obligations:	674
(+) Capital Leases:	-
(+) Restructuring & Legal Liab.:	2,849
Enterprise Value:	**€ 22,981**
LTM EV / Revenue:	1.9 x
LTM EV / EBITDA:	10.9 x
LTM P / E:	32.3 x

Issuing Common or Preferred Dividends

What if It Issues EUR 1,000 in Dividends?	
Cash Changes By:	(1,000)
Debt Changes By:	-
Equity Changes By:	(1,000)
Preferred Stock Changes By:	-
Diluted Equity Value:	**€ 24,356**
(-) Cash & Cash-Equivalents:	132
(-) Other Investments:	(659)
(-) Equity Investments:	(290)
(-) Other Non-Core Assets, Net:	(17,983)
(-) Value of Net Operating Losses:	-
(+) Total Debt:	12,243
(+) Preferred Stock:	-
(+) Noncontrolling Interests:	1,659
(+) Unfunded Pension Obligations:	674
(+) Capital Leases:	-
(+) Restructuring & Legal Liab.:	2,849
Enterprise Value:	**€ 22,981**
LTM EV / Revenue:	1.9 x
LTM EV / EBITDA:	10.9 x
LTM P / E:	32.3 x

Note that both Common and Preferred Dividends **affect Equity Value and Enterprise Value in the same way**.

Issuing either type of Dividend reduces a company's Equity on the Balance Sheet (Retained Earnings specifically) and therefore reduces its Equity Value as well – since Equity Value represents the *market value* of a company's Equity.

The company uses Cash to issue these Dividends, so its Cash balance falls.

Enterprise Value doesn't change because the Cash and Equity changes offset each other.

So the Enterprise Value-based multiples stay the same, while the P/E multiple changes.

Other Variations

As with the "multi-step Accounting questions," you can answer other variations by working through the individual changes.

For example, what if a company raises $1,000 in Debt, issues $500 in Dividends, and keeps $500 of it in Cash?

The $1,000 Debt issuance will increase Cash and Debt by $1,000, so Enterprise Value stays the same. Equity Value doesn't change because the Cash increase was funded by non-equity investors.

After the company issues $500 in Dividends, its Equity Value falls by $500, but its Enterprise Value stays the same because the reduced Cash and reduced Equity Value cancel each other out.

So its P / E multiple declines and its Equity Value falls by $500, but everything else stays the same.

If you get a question like: "A company raises $1,000 in Equity and uses it to purchase PP&E. What happens?" then you need to think about whether or not the purchased item is a **core-business Asset**.

In this question, for example, $1,000 of Equity will increase Equity Value by $1,000, but the $1,000 in extra Cash offsets the change and Enterprise Value stays the same.

The PP&E *is* a core-business Asset, so this purchase will boost Enterprise Value by $1,000.

But Equity Value stays the same after this step – it's still $1,000 higher.

That's because **the value of the company's Total Assets has not changed**. Cash decreased by $1,000, but PP&E increased by $1,000, so Total Assets remained the same.

Equity Value includes the value of all the company's Assets, so it doesn't change.

If the company had purchased $1,000 in Short-Term Investments with this Cash, then its Equity Value would still be $1,000 higher for the same reason: Total Assets haven't changed.

But its Enterprise Value would **NOT** increase because Short-Term Investments are **not** a core-business Asset.

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Key Rule #6: Diluted Equity Value: Options, Convertibles, and More

If a company is **public** – you can buy its shares on the stock market, and the company issues reports on its financial performance – then its Current Equity Value is more complex than Shares Outstanding * Current Share Price.

The company might also have **dilutive securities** that could *potentially* create more shares if the company's share price reaches a certain level.

For example:

- The company decides to pay its employees using **stock options**. The company's share price is $10.00 right now, but if it reaches $20.00, the employees can pay the company $20.00 per option to get 1 new share of the company. So if the company's share price jumps up to $30.00, some employees might start exercising their options and creating new shares.

- The company issues a **convertible bond** to meet its funding requirements. Right now, the company's share price is $50.00. But if it reaches $100.00, the convertible bond investors can "convert" the bond into shares and make a lot more money if the share price keeps increasing.

- The company issues **restricted stock units (RSUs)** to employees. These are like normal shares of the company, but they have restrictions on when the employees can buy and sell them.

Companies issue these types of securities **because they reduce companies' cash expenses in the short term**.

For example, instead of paying higher cash salaries to employees, they can offer lower salaries and more in stock or stock options.

That might cost the company more in the future *IF* its share price increases, but in the short term, cash costs decrease.

A company might issue a **convertible bond** because **interest rates on convertibles are lower than they are on traditional Debt** – so the company reduces its cash expenses in the short term at the risk of possible higher costs in the future.

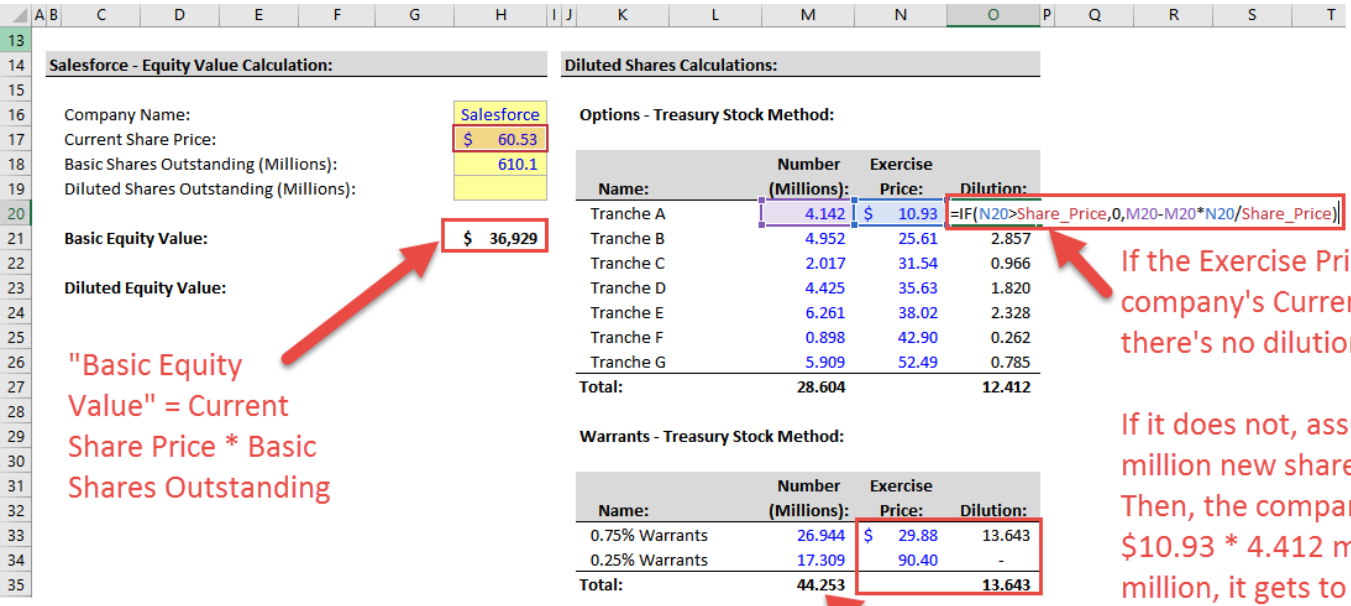
There are **3 ways** of factoring in dilution from these securities:

1) **Treasury Stock Method** – This one applies to options and warrants. You assume that the option/warrant holders pay the company and get new shares, and that the company then uses this money to *repurchase* some of these new shares.

2) **"If Converted" Method** – This one applies to convertible bonds and sometimes other securities that are linked to the company's share price. You check to see if the company's share price is above a certain level; if it is, you count the shares, and if it is not, you don't count the shares (with a convertible bond, you count it as Debt instead).

3) **Straight-Up Addition** – This one applies to restricted stock, restricted stock units (RSUs), and sometimes other variants of these. You simply add these units to the company's share count to calculate the diluted shares.

Here are examples of each method, using **Salesforce.com** as our subject company:



Salesforce - Equity Value Calculation:

Company Name:	Salesforce
Current Share Price:	$ 60.53
Basic Shares Outstanding (Millions):	610.1
Diluted Shares Outstanding (Millions):	
Basic Equity Value:	**$ 36,929**
Diluted Equity Value:	

Diluted Shares Calculations:

Options - Treasury Stock Method:

Name:	Number (Millions):	Exercise Price:	Dilution:
Tranche A	4.142	$ 10.93	=IF(N20>Share_Price,0,M20-M20*N20/Share_Price)
Tranche B	4.952	25.61	2.857
Tranche C	2.017	31.54	0.966
Tranche D	4.425	35.63	1.820
Tranche E	6.261	38.02	2.328
Tranche F	0.898	42.90	0.262
Tranche G	5.909	52.49	0.785
Total:	**28.604**		**12.412**

Warrants - Treasury Stock Method:

Name:	Number (Millions):	Exercise Price:	Dilution:
0.75% Warrants	26.944	$ 29.88	13.643
0.25% Warrants	17.309	90.40	-
Total:	**44.253**		**13.643**

"Basic Equity Value" = Current Share Price * Basic Shares Outstanding

If the Exercise Price exceeds the company's Current Share Price, there's no dilution.

If it does not, assume 4.412 million new shares get created. Then, the company uses the $10.93 * 4.412 million, or $45.3 million, it gets to repurchase some of those new shares. It buys back about 0.748 million of them, making the Dilution 3.394 million rather than 4.142 million.

You also use the Treasury Stock Method (TSM) approach for Warrants, which is why only 13.6 million shares get created for the first tranche.

So the math for Tranche A of Salesforce's options goes like this:

- **Initially Created Shares:** 4.142 million
- **Company Gets Cash Proceeds of:** $10.93 * 4.142 million = $45.272 million
- **Company Repurchases:** $45.272 million / $60.53 = 0.748 million shares.

- **Net Dilution:** 4.142 million – 0.748 million = 3.394 million.

If the Tranche A options had an exercise price of $100.00 instead, there would be **no dilution** because the exercise price would be above the company's current share price.

Those options are **out-of-the-money**, while anything with an exercise price less than the company's current share price is **in-the-money**.

In interviews, the numbers will never be this ugly. A realistic interview question might be: "A company's current share price is $20.00. It has 10 million shares and 1 million options with an exercise price of $10.00. What is its Diluted Equity Value?"

To answer that, assume that all 1 million of shares get created. The company receives 1 million * $10.00, or $10 million, in proceeds. At a share price of $20.00, it can buy back half of those shares, or 500,000. So the company ends up with 10.5 million diluted shares.

The Diluted Equity Value = 10.5 million * $20.00 = $210 million.

In real life, a company will NOT necessarily use the proceeds from these option exercises to repurchase shares.

We make this assumption simply to **standardize** the calculation and make the diluted share count comparable for different companies.

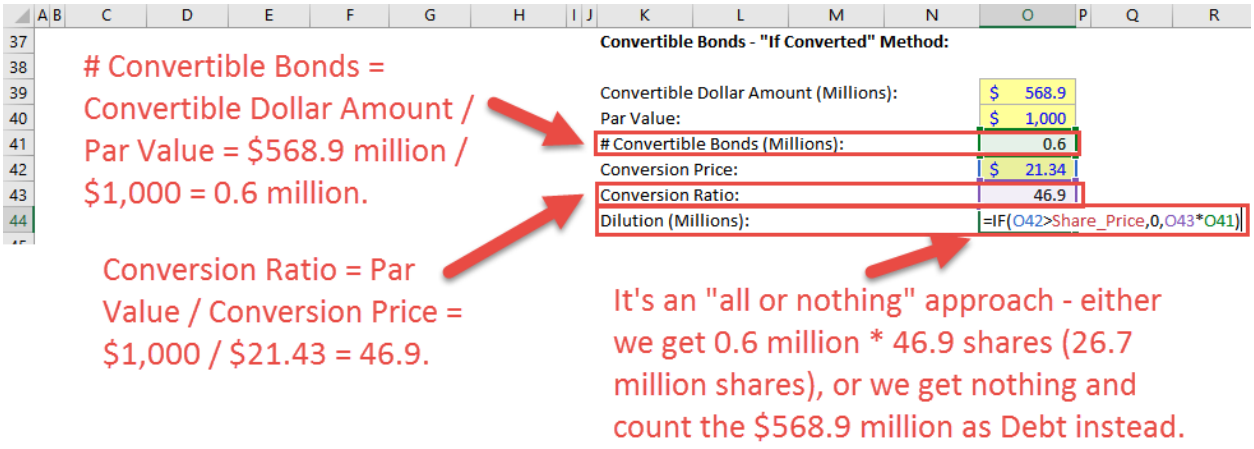
Convertible bonds work differently because you take an "all or nothing" approach (the "If Converted" method).

If the company's current share price exceeds the *conversion price*, then you assume that all the bonds convert into shares.

If it does not, then you assume that nothing converts and you count all the convertible bonds as Debt instead.

There's a bit more math involved because you have to calculate the **number of convertible bonds**, and the number of shares each one converts into, first.

Here's an example using Salesforce's convertible bonds:



Convertible Bonds - "If Converted" Method:	
Convertible Dollar Amount (Millions):	$ 568.9
Par Value:	$ 1,000
# Convertible Bonds (Millions):	0.6
Conversion Price:	$ 21.34
Conversion Ratio:	46.9
Dilution (Millions):	=IF(O42>Share_Price,0,O43*O41)

In interviews, you'll never get numbers this ugly. A more realistic question might be:

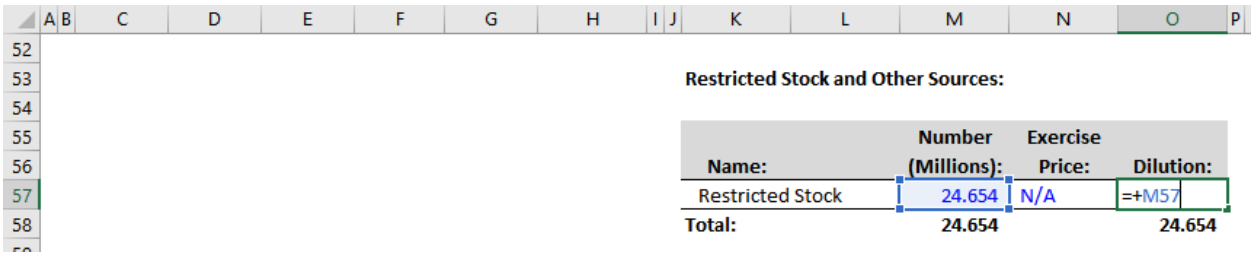
"A company has $200 million of convertible bonds with a par value of $1,000 per bond. The conversion price is $20.00, and the company's current share price is $30.00. How many diluted shares get created by the convertible bond?"

And the answer is: "The current share price exceeds the conversion price, so we count the shares from the convertible bond. $200 million / $1,000 = 200,000 bonds. The Conversion Ratio is $1,000 / $20.00, or 50.0, and so the Dilution = 50.0 * 200,000 bonds = 10 million shares."

Whether you count convertible bonds as Debt or Equity makes no difference to the Enterprise Value calculation.

And when a company *issues* convertible bonds, Enterprise Value doesn't change: The company gets more Cash, and then either Debt or Equity Value increases (or sometimes a combination of both… see the DCM-related lessons and guides).

The final method of calculating dilution – the "Straight-Up Addition" method – is easy because you simply add the shares from different sources, such as Restricted Stock and RSUs:

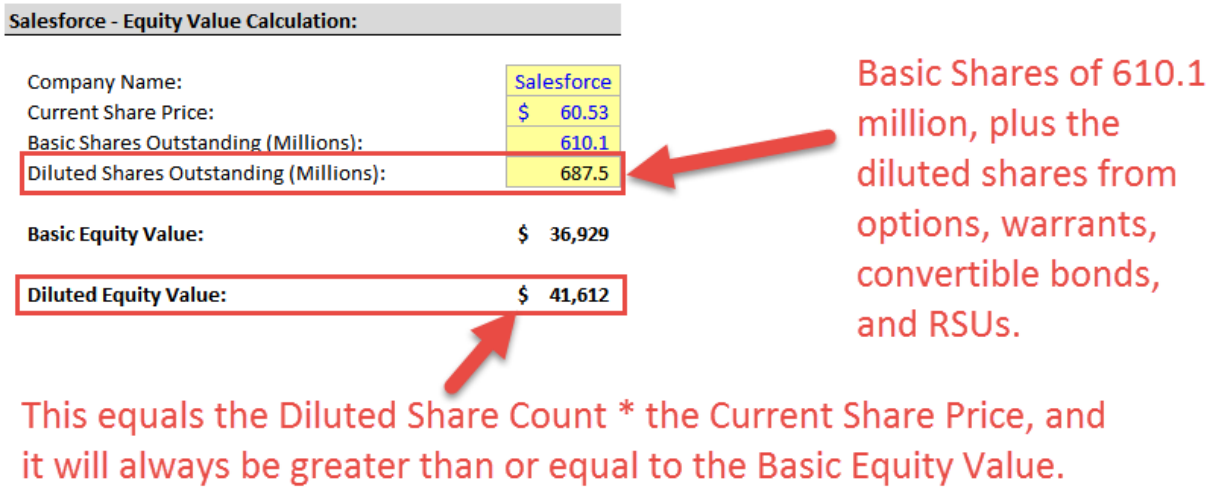


Restricted Stock and Other Sources:

Name:	Number (Millions):	Exercise Price:	Dilution:
Restricted Stock	24.654	N/A	=+M57
Total:	24.654		24.654

The result of all this work is the company's **diluted share count**, which includes its "basic shares" plus the *potential* shares from options, warrants, convertible bonds, RSUs, and other sources.

You can then multiply the company's diluted share count by its current share price to calculate its **Current Diluted Equity Value**:



Diluted Equity Value doesn't "mean" anything in particular; it's just a more accurate way of calculating the company's Current Equity Value.

When you value a company using *your views,* and you determine its Implied Enterprise Value and Implied Equity Value, you have to use the company's Diluted Share Count to back into the company's *Implied Share Price*.

If the company's Implied Equity Value is $100 million, its Implied Share Price will be quite different if you use its diluted share count of 1.2 million rather than its basic share count of 1 million.

Dilutive securities also exist for private companies, but you don't have to think about them quite as much. That's because you often stop at the company's **Implied Enterprise Value** or **Implied Equity Value**.

Dilutive securities make a much bigger impact on public companies because valuation is almost always tied to the company's *Implied Share Price*, which comes from its Implied Equity Value.

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Key Rule #7: How to Move from Equity Value to Enterprise Value

In theory, it should be **easy** to move between Equity Value and Enterprise Value because you already know the definitions of these terms:

- **Equity Value** = Value of Core-Business Assets + Value of Non-Core-Business Assets
- **Enterprise Value** = Value of Core-Business Assets

- **Equity Value** = Value to Equity Investors
- **Enterprise Value** = Value to Equity Investors + Value to Debt Investors + Value to Preferred Investors (and possibly others)

So to move from Equity Value to Enterprise Value, **you subtract non-core-business Assets,** and **you add items that represent other investor groups**.

And to move from Enterprise Value to Equity Value, **you add non-core-business Assets,** and **you subtract items that represent other investor groups**.

For simple scenarios, this approach works well.

A company has Cash, Debt, and Preferred Stock, so you subtract Cash from Equity Value and add Debt and Preferred Stock to move to Enterprise Value.

But in real life, it's not always easy to determine what a "non-core-business Asset" is or which items represent "other investor groups."

For example, people often add Unfunded Pensions when they calculate Enterprise Value, but do they truly represent "another investor group"?

Similarly, are all Financial Assets and Investments truly "non-core-business Assets"? How can you tell what is "core" to a company's business?

We'll start by giving you **3 rules of thumb** you can use to determine what to add and subtract, and then we'll go through Vivendi's Balance Sheet and explain why you should add or subtract various items when calculating Enterprise Value.

Rule of Thumb #1: Add Long-Term Funding Sources When Moving from Equity Value to Enterprise Value

Some of these are obvious – Debt and Preferred Stock, for example.

But others, such as Unfunded Pension Obligations, don't *seem* like they represent "other investor groups." **But they do represent other investor groups because they provide long-term funding**.

With pensions, for example, **the employees** act like this "Other Investor Group."

The company pays its employees *less* in the current period in exchange for promising to pay them *more* in the future when they retire.

If the pension is **funded**, i.e. the expected future costs equal the Assets the company has set aside to pay for it, this doesn't matter, and it doesn't affect Enterprise Value.

But if the pension is **unfunded**, the company has effectively "borrowed money" from its employees to fund its operations.

You should add anything else that funds the company's operations for *years* when moving from Equity Value to Enterprise Value.

Examples: Debt, Preferred Stock, Noncontrolling Interests, Capital Leases, Unfunded Pensions, and Restructuring or Environmental Liabilities.

Rule of Thumb #2: Add Items That Will Cost a Potential Acquirer Extra When Moving from Equity Value to Enterprise Value

I hesitate to list this one because it might lead you to believe that Enterprise Value is "the true cost to acquire a company" – which is **NOT QUITE TRUE**, as we demonstrated before.

But if the company has raised funding, and the terms of that funding say that it must be repaid in a "change of control" – an acquisition – you should add it when moving from Equity Value to Enterprise Value.

The best examples are **Debt** and **Preferred Stock**, which almost always must be repaid or replaced ("refinanced") in an acquisition.

Items like Accounts Payable don't qualify because **the company repays them naturally with its operational cash flows**.

Plus, the company not never required to make cash payments for all its outstanding payables if it is acquired.

Rule of Thumb #3: Subtract Items That Are NOT Operating Assets When Moving from Equity Value to Enterprise Value

Could a company continue to operate *without* a certain Asset and still be fine?

Or did the company *get* a certain Asset as a result of its side activities, such as real estate or stock investing?

If at least one of those is true, you should probably subtract the item.

This rule means that "non-core" items often differ by industry.

For example, **fuel hedges** (i.e., derivative contracts to lock in oil prices at certain levels) are considered core-business Assets for an airline company.

But if a consumer/retail or technology company used fuel hedges, they would be considered non-core-business Assets.

You can think of these items as "saving an acquirer money," but **be careful because that is MOSTLY true for Cash and Investments** and **NOT** as true for other items.

Examples: Cash, Investments, Net Operating Losses (NOLs), Assets Held for Sale, and Assets of Discontinued Operations.

Here's an example of how you might apply these rules to Vivendi's Balance Sheet:

Balance Sheet:	Q1 End:		Should You SUBTRACT It in the Equity Value --> Enterprise Value Calculation?
Assets:			
Current Assets:			
Cash:	€	868	**Yes! Always.** Cash is a non-core-business Asset.
Current Financial Assets:		21	**Almost certainly.** But check the footnotes to make sure they really are "non-core."
Accounts Receivable:		2,227	No! Never. It's an operating asset.
Current Content Assets:		981	No! Never. It's an operating asset (TV/films for a media company).
Current Tax Receivables:		636	No! Never. It's an operating asset (constantly being collected/paid out).
Inventory:		99	No! Never. It's an operating asset.
Assets Held for Sale:		1,230	**Yes! Always.** It's the definition of a non-core-business Asset since it's about to be sold off!
Assets of Discontinued Businesses:		25,025	**Yes! Always.** It's the definition of a non-core-business Asset since it's about to be sold off!
Total Current Assets:		**31,087**	
Non-Current Assets:			
Property, Plant & Equipment:		3,209	No! Never. It's an operating asset.
Goodwill:		10,519	No! Never. It is an operating asset since it reflects the value of acquired companies.
Other Intangible Assets:		395	No! Never. It is an operating asset since it reflects the value of acquired companies.
Non-Current Content Assets:		2,528	No! Never. It's an operating asset (TV/films for a media company).
Investments in Equity Affiliates:		290	**Yes! Always.** This one is a non-core-business Asset, but it's also done for comparability.
Non-Current Financial Assets:		638	**Almost certainly.** But check the footnotes to make sure they really are "non-core."
Deferred Tax Assets:		667	**Maybe**! Need to read the footnotes and see… you sometimes subtract NOLs.
Total Non-Current Assets:		**18,246**	
Total Assets:	**€**	**49,333**	

It's better to use the **market values** of all these items rather than the book values (i.e., what's shown on the Balance Sheet).

But in practice, there's almost no difference for items like Cash and Investments, and even if there is a difference, it might be almost impossible to estimate the market values.

Here's how you might think about items on the Liabilities & Equity side of the Balance Sheet:

Liabilities & Equity:			Should You ADD It in the Equity Value --> Enterprise Value Calculation?
Current Liabilities:			
Short-Term Debt and Borrowings:	€	3,934	**Yes! Always.** Short-term borrowings represent another investor group (lenders).
Accounts Payable:		5,213	No! Never. Constantly being accrued and then paid out in cash… not a long-term funding source.
Current Tax Payables:		105	No! Never. Constantly being accrued and then paid out in cash… not a long-term funding source.
Current Provisions:		272	**Maybe!** Need to review the footnotes; could potentially represent lenders.
Liabilities of Discontinued Businesses:		8,272	**Yes! Always.** Needs to be netted against the *Assets* for Discontinued Businesses.
Total Current Liabilities:		**17,796**	
Non-Current Liabilities:			
Long-Term Debt and Borrowings:		8,309	**Yes! Always.** Long-term debt is a funding source and represents another investor group (lenders).
Deferred Tax Liabilities:		685	No! Never. Just a temporary *timing difference* between cash and book taxes.
Non-Current Provisions:		2,715	**Maybe!** Need to review the footnotes; could potentially represent other investors.
Other Non-Current Liabilities:		205	**Maybe!** Need to review the footnotes; could potentially represent other investors.
Total Non-Current Liabilities:		**11,914**	
Total Liabilities:	€	**29,710**	
Equity:			
Shareholders' Equity:			
Share Capital:		7,368	No! Never. You always use the Market Value of Equity, in other words
Additional Paid-In Capital:		8,381	Shares Outstanding * Share Price, to represent all these items and you skip what's
Treasury Shares:		(22)	on the Balance Sheet since the market value is more accurate.
Retained Earnings and Other:		2,237	
Total Shareholders' Equity:	€	**17,964**	
Noncontrolling Interests:		1,659	**Yes! Always.** Represents another funding source, and done for comparability purposes.
Total Equity:	€	**19,623**	
Total Liabilities & Equity:	€	**49,333**	

Most of these items are straightforward, but a few deserve more explanation:

- **Goodwill & Other Intangible Assets:** Remember that these get created when the company acquires other companies. So if *those* acquired companies are still part of this company's operations, then these items both **count** as core-business Assets!

- **Deferred Tax Assets (DTAs):** Some of these correspond to simple timing differences that will be reversed, but portions could also correspond to **Net Operating Losses (NOLs)**, which are non-core Assets that will reduce the company's future cash taxes. You subtract NOLs, but not the rest.

- **Industry-Specific Assets:** These almost always **count** as core-business Assets. Anything with "Content" in the name has a lot to do with Vivendi's core business of producing and selling content.

- **"Provisions" and "Other Liabilities":** These items have vague names, so you need to check what's in them before you do anything. If these items include Debt, other interest-bearing borrowings, or Unfunded Pensions, you should add those portions. But if these items are related to timing differences or unknown future expenses, you should probably *not* add them.

- **Deferred Tax Liabilities (DTLs):** You never factor these in because DTLs are operational and correspond to **timing differences** that will reverse in the future. They also don't represent another investor group.

Equity Investments and Noncontrolling Interests in Enterprise Value

If you went through the "More Advanced" Accounting lessons or read the guide there, you already know what **Equity Investments** (AKA Associate Companies) and **Noncontrolling Interests** (FKA Minority Interests) are.

If not, it's easiest to explain these concepts with simple examples.

We'll start with **Equity Investments**, which are Assets that represent a company's stake in another company when it owns **less than 50%** of that company.

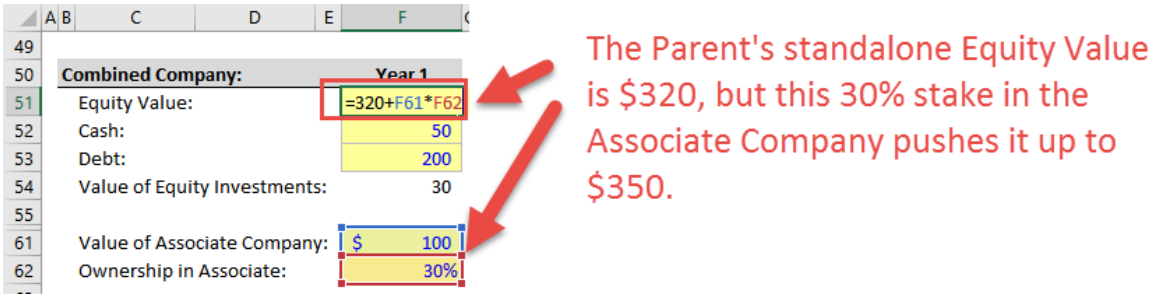
Let's say a company's Current Equity Value is $350. Among other Assets, this company also happens to own a **30% stake** in another company.

We'll label the $350 Equity Value company "Parent Company," and the other company "Associate Company."

This 30% stake in the Associate Company counts as an **Asset**. The Parent Company could sell it for cash, and the stake might also generate future cash flow for the Parent.

Equity Value reflects the value of **ALL** the Assets the company has, so this 30% stake must be included in the Parent Company's Equity Value.

Here's what it looks like if the Associate Company is worth $100 total:

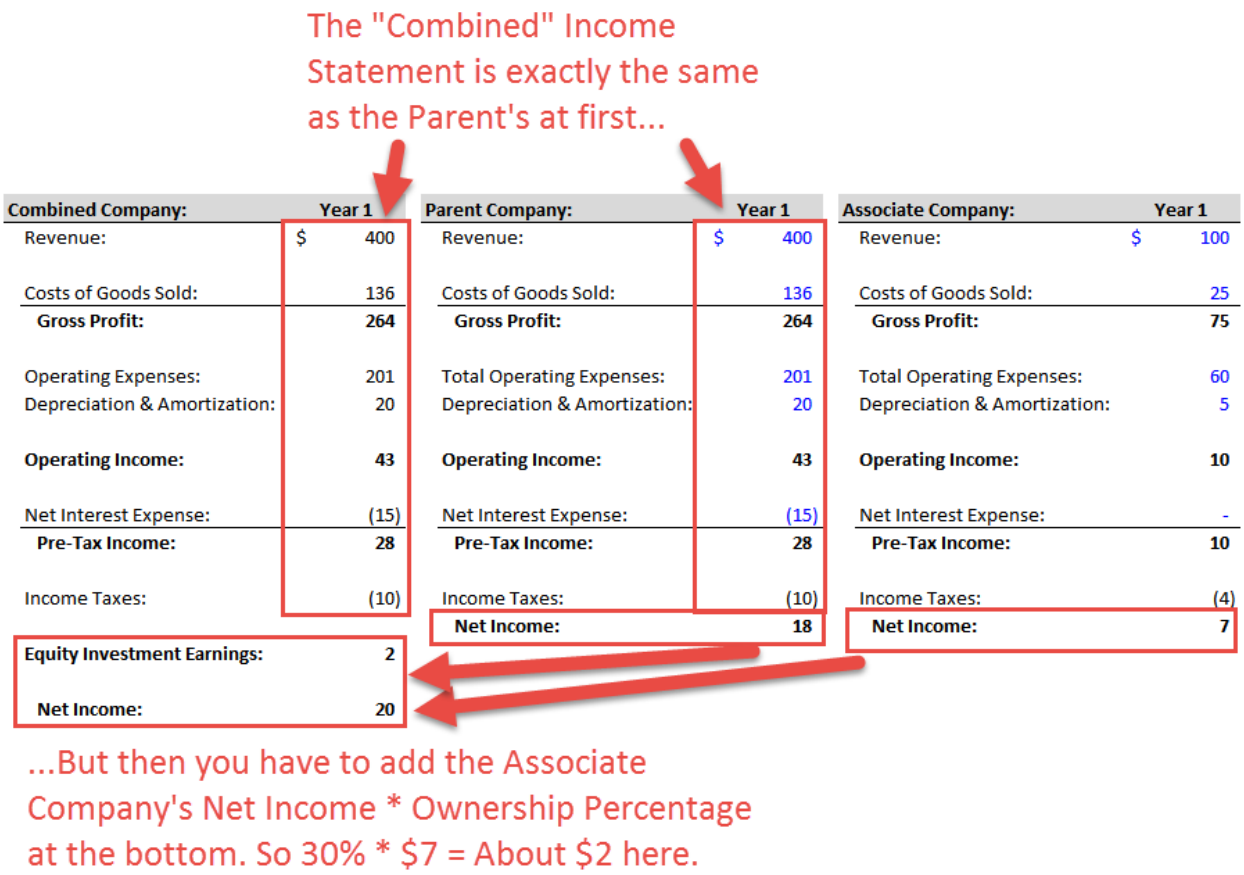


So why do you **subtract** Equity Investments when moving from Equity Value to Enterprise Value?

1. They are considered **non-core-business Assets**. In other words, this Parent Company could easily *run its business* without this 30% stake in the Associate Company.

2. For **comparability purposes**. The Parent Company's Revenue and Operating Income **will not reflect any contributions** from Associate Companies that it owns less than 50% of, so you need to remove these stakes from Enterprise Value as well.

Here's what the Income Statements might look like:



Combined Company:	Year 1
Revenue:	$ 400
Costs of Goods Sold:	136
Gross Profit:	**264**
Operating Expenses:	201
Depreciation & Amortization:	20
Operating Income:	**43**
Net Interest Expense:	(15)
Pre-Tax Income:	**28**
Income Taxes:	(10)
Equity Investment Earnings:	**2**
Net Income:	**20**

Parent Company:	Year 1
Revenue:	$ 400
Costs of Goods Sold:	136
Gross Profit:	**264**
Total Operating Expenses:	201
Depreciation & Amortization:	20
Operating Income:	**43**
Net Interest Expense:	(15)
Pre-Tax Income:	**28**
Income Taxes:	(10)
Net Income:	**18**

Associate Company:	Year 1
Revenue:	$ 100
Costs of Goods Sold:	25
Gross Profit:	**75**
Total Operating Expenses:	60
Depreciation & Amortization:	5
Operating Income:	**10**
Net Interest Expense:	-
Pre-Tax Income:	**10**
Income Taxes:	(4)
Net Income:	**7**

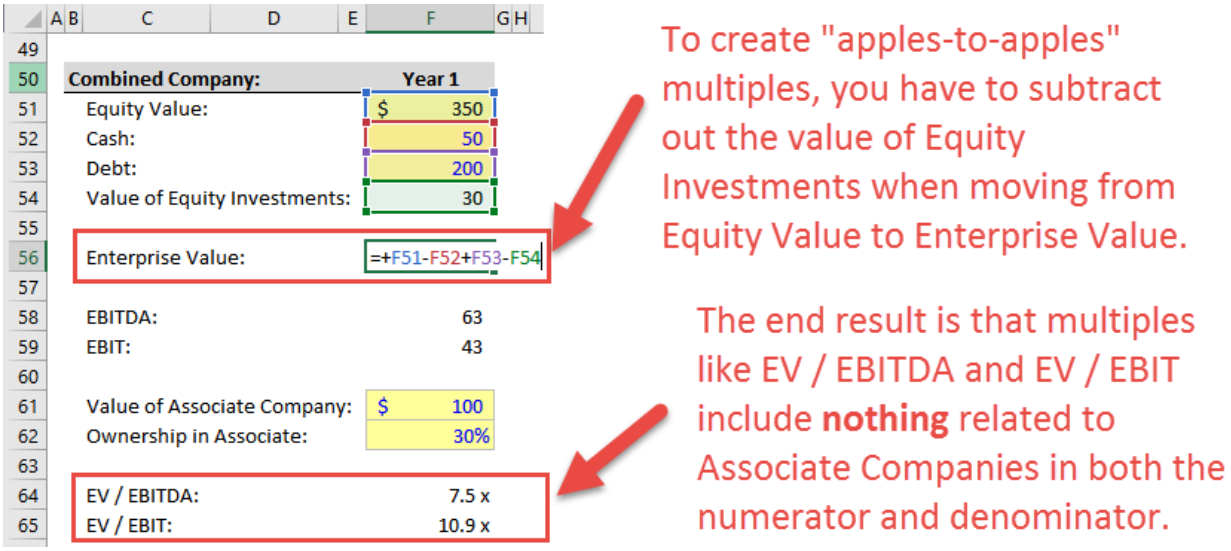
Accounting rules under both U.S. GAAP and IFRS stipulate this presentation.

There isn't a particular reason for it, other than: "When a company owns less than 50% of another company, it does **not** consolidate the financial statements."

If you tried to calculate EV / EBIT or EV / EBITDA multiples for the Parent Company, you would run into a problem:

- **EBIT** = $43; **EBITDA** = $63
- **Enterprise Value** = $320 + 30% * $100 – $50 + $200 = $500.
- **But** this Enterprise Value figure reflects the value of that 30% stake ($30). EBITDA and EBIT **do not** reflect this 30% stake because they're based on **just** the Parent Company's statements.

So you must subtract the value of this 30% stake:



You could try to add Associate Company's EBITDA * 30% to the Parent Company's EBITDA and skip this subtraction to calculate EV / EBITDA.

But there are two problems with that approach:

1. Companies rarely, if ever, **disclose enough information to do this**.
2. Even if you *could* use this method, Equity Investments still count as non-core-business Assets and should therefore **not** be included in Enterprise Value.

This accounting treatment applies to any case where the Parent owns between 20% and 50% of another company, but in practice, companies often use it for **any stake under 50%**, even if it's only 10% or 15%.

Noncontrolling Interests represent the opposite scenario; they're Liability & Equity line items that are used when a company owns *more than 50% but less than 100%* of another company.

But be careful – the Noncontrolling Interest itself represent the portion the Parent Company does NOT own in the other company.

In these cases, the Parent Company **consolidates its financial statements 100%** with those of the Other Company.

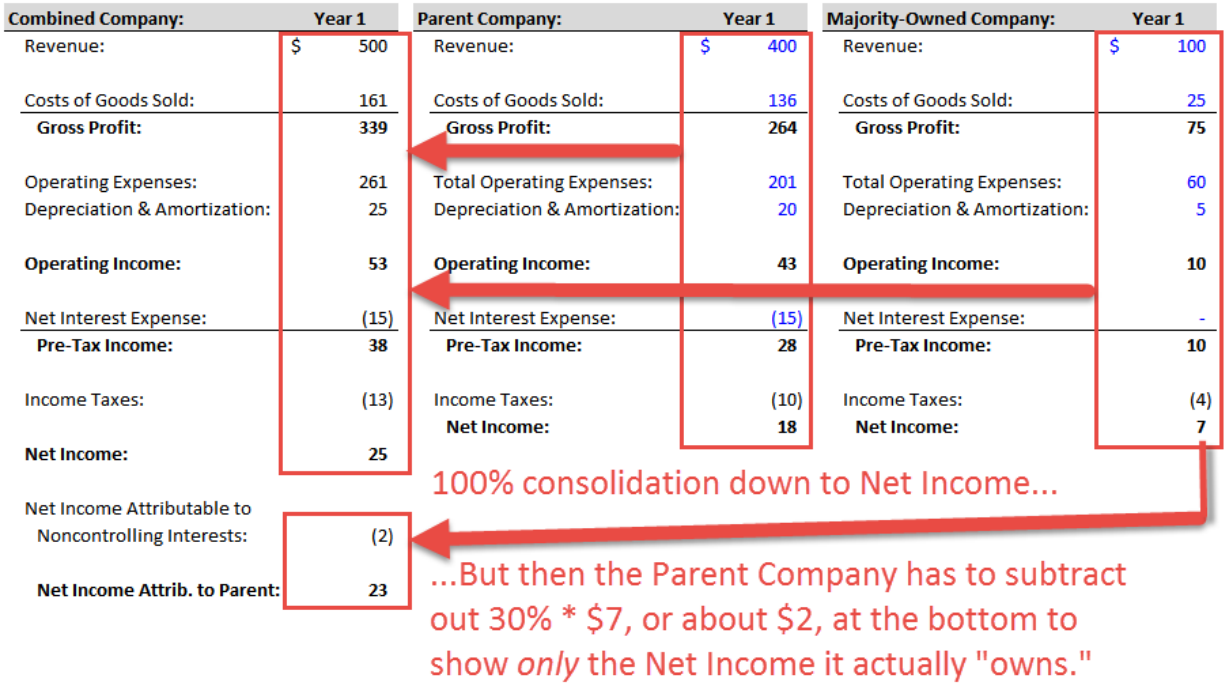
Even if the Parent Company owns only 70% of the Other Company, **it includes 100% of this Other Company's revenue, expenses, taxes, and other items on its own statements**.

The Parent Company also has to note that it does **not** own 100% of the Other Company.

It does this by recording a **Noncontrolling Interest** on the L&E side of its Balance Sheet and by deducting the Net Income that's *attributable* to the Other Company on its Income Statement.

So if the Parent Company owns 70% of the Other Company, the Noncontrolling Interest represents the value of the 30% it does **not** own.

And the Net Income Attributable to Noncontrolling Interests on its Income Statement represents the 30% of the Other Company's Net Income it does **not** own:

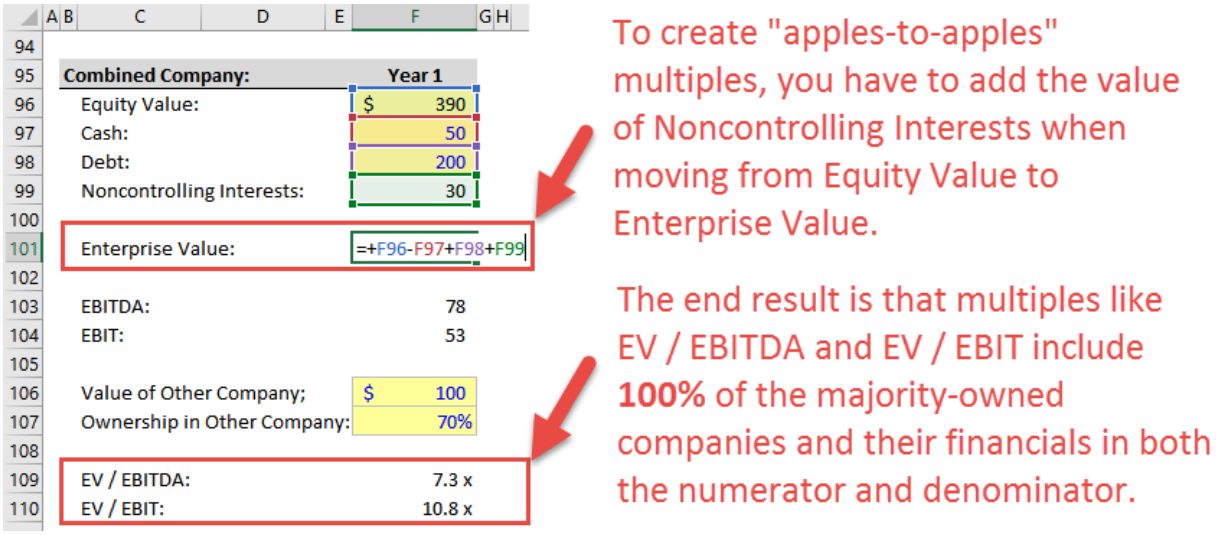


Because of this accounting treatment, we get the **opposite problem** that we did with Equity Investments. Think about how you'd calculate EV / EBITDA and EV / EBIT now:

- **EBIT** = $53; **EBITDA** = $78
- **Enterprise Value** = $320 + 70% * $100 – $50 + $200 = $540.
- **But** this Enterprise Value figure reflects the value of that 70% stake ($70). EBIT and EBITDA, by contrast, **reflect 100% of the Other Company's EBIT and EBITDA**.

So we get a "mismatched multiple" since the numerator includes 70% of the Other Company's value, while the denominator includes 100% of the Other Company's financial metrics.

To get around this, you have to **add** the value of the Noncontrolling Interests when moving from Equity Value to Enterprise Value:



In theory, you could try to **subtract** the Other Company's EBITDA * 30% from the Parent Company's EBITDA and skip the normal addition to calculate EV / EBITDA.

But there are two problems with that approach:

1. Companies rarely, if ever, **disclose enough information to do this**.
2. Even if you *could* use this method, Noncontrolling Interests represent "another investor group" (since the Parent Company could get funding from the Other Company it owns over 50% of), and should, therefore, be counted in Enterprise Value.

This treatment **only** applies to "Over 50% but less than 100%" ownership stakes. So even if the Parent Company owns 49.9%, Equity Investment accounting would apply.

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Key Rule #8: Valuation Metrics: EBIT vs. EBITDA vs. Net Income

EBIT, EBITDA, and Net Income are some of the most common **valuation metrics**.

And you use them to create 3 of the most common **valuation multiples:** EV / EBIT, EV / EBITDA, and P / E.

You should already know what these metrics mean from the accounting lessons and guides, but in the context of valuation, you can think of them as **attributes of a property**.

We mentioned that EV / EBITDA is like a "per-square-foot" value for a property; by that analogy, EBITDA is like **the number of square feet**.

EBITDA, EBIT, and Net Income all measure a company's **profitability**, and the corresponding multiples measure a company's **value in relation to its profits**.

These metrics differ in **4 key respects:**

1) **To Whom is the Money is Available?** – Equity investors, Debt investors, and the government? Just Equity investors? Someone else?

2) **Operating Expenses vs. Capital Expenditures (CapEx)** – Some metrics reflect the impact of both of these, whereas others reflect only Operating Expenses and ignore spending on long-term Assets.

3) **Interest, Taxes, and Non-Core Business Activities** – Some metrics include these, and some exclude them.

4) **When They're Useful** – Sometimes you **WANT** to reflect the impact of CapEx, and sometimes you don't. The same applies to interest and taxes.

We'll explain these differences below and then give you a **summary chart**:

How to Calculate Each Metric

EBIT = Operating Income on the Income Statement.

EBITDA = Operating Income on the Income Statement + Depreciation & Amortization (from the CFS).

Net Income = Net Income on the Income Statement (and use Net Income to Common if there are Preferred Dividends).

Sometimes you'll adjust these metrics for non-recurring charges, but this concept isn't important for interviews.

EBIT corresponds to Enterprise Value (EV / EBIT is the multiple).

EBITDA corresponds to Enterprise Value (EV / EBITDA is the multiple).

Net Income corresponds to Equity Value (P / E is the multiple).

To Whom is the Money Available?

With EBIT and EBITDA, Equity investors, Debt investors, Preferred investors (if they exist), and the government all have claims.

This is because **no one has been "paid" yet** – a company's Operating Income is still available to *everyone* since it's above Interest Expense, Dividends of all types, and Taxes.

With Net Income (to Common), only Equity investors have a claim because Debt investors have been paid with interest, and the government has been paid with taxes. And Preferred Investors, if they exist, have been paid with Preferred Dividends.

What Does the Metric Mean?

EBIT = Core, recurring business *profitability*, before the impact of capital structure and taxes.

EBITDA = Proxy for core, recurring business *cash flow from operations*, before the impact of capital structure and taxes.

Net Income = Profit after taxes, the impact of capital structure (interest), AND non-core business activities.

Which Expenses Does the Metric Reflect?

EBIT reflects operating expenses and the *after-effects* of CapEx, but not CapEx directly (since Depreciation reduces Operating Income); it **EXCLUDES** interest, taxes, and non-core activities.

EBITDA is almost the same, but it does **NOT** include any after-effects from CapEx.

Net Income reflects everything – operating expenses, the after-effects of CapEx (because of the Depreciation on the Income Statement), interest, taxes, and non-core business activities.

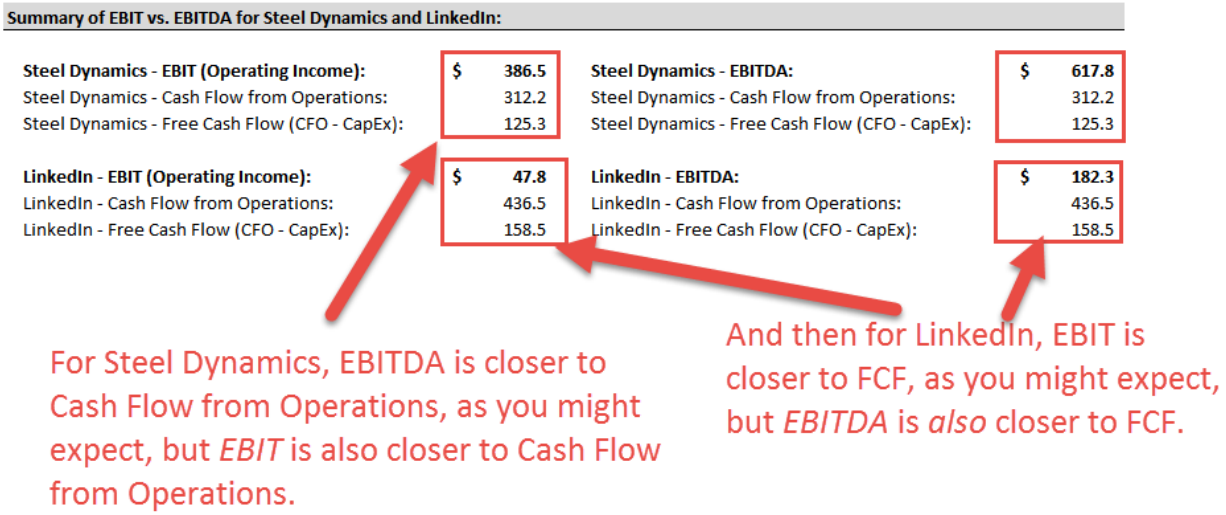
For Which Type of Cash Flow Is This Metric a Proxy?

EBIT is *sometimes* closer to **Free Cash Flow** (Cash Flow from Operations – CapEx) because both metrics reflect some impact (or after-effect) from CapEx…

EBITDA is *sometimes* closer to **Cash Flow from Operations** because NEITHER one includes any impact or after-effect from CapEx…

And **Net Income** is not close to either one.

These "rules" rarely hold up in real life. Here's an example of why they don't work that well, using LinkedIn and Steel Dynamics' financial results from one year:



We get this strange behavior for a few reasons:

First, **Working Capital** is massively negative for Steel Dynamics, but very positive for LinkedIn.

Second, LinkedIn has a huge amount of **Stock-Based Compensation**, whereas Steel Dynamics has almost nothing – that alone will make cash flow-based metrics significantly different from EBIT and EBITDA.

Finally, Steel Dynamics is spending **very little** on CapEx, and its CapEx as a % of Revenue was *less than* LinkedIn's at this time.

So these guidelines are **rules of thumb**, not laws of nature.

Which Metric or Multiple Do You Use, and Why?

"Which multiple do you use?" is a common interview question, but it's based on a **false premise:** That you *have* to use one specific metric or multiple.

In reality, you always use a **variety** of metrics and multiples.

So you might look at EV / Revenue, EV / EBITDA, and P / E all for the same company.

If you visit the doctor in real life, she won't give you *just one* test.

She might give you a physical exam, a blood test, an X-ray, and other tests, and they all pinpoint different problems.

If you're pressed for an answer on the *specific* metric or multiple to use, **EBIT is better than EBITDA if you WANT to reflect the after-effects (or "impact") of Capital Expenditures**.

For example, if you're analyzing a company in an industry where CapEx significantly affects the company's value, such as airlines or manufacturing, EBIT might be more appropriate.

EBITDA might be better in an industry where CapEx matters less, such as software, Internet, services, or anything else where R&D spending drives value.

But it also depends on a company's maturity – CapEx tends to be more important for high-growth companies, while it is less important for mature, stable companies.

These guidelines get *very* subjective because you **might** still focus on EBITDA even if CapEx is a key value driver.

You might do that to "normalize" different companies and remove the after-effects of CapEx altogether.

For example, if one company is spending 15% of Revenue on CapEx, and another is spending 2%, and you want to **ignore that difference**, you might use EBITDA and EV / EBITDA.

Net Income and P / E multiples are generally not great to use for *any* company.

The problem is that Net Income is affected by different tax rates and capital structures, but it's also quite far away from cash flow-based metrics because it excludes Working Capital and the *full* impact of CapEx.

So Net Income and P / E give you something that's **less standardized** and **less useful** for comparing companies, and also something that's **not close to the real cash flow**.

Despite that, P / E remains popular because it is easy to understand and calculate.

For a simple example of how P / E multiples can be misleading, consider two companies that both have the same **Enterprise Value**: $500.

Company A is 100% Equity, so Equity Value = Enterprise Value = $500.

Company B is 60% Equity, so Equity Value = $300, Net Debt = $200, and Enterprise Value = $500.

Both companies have identical Income Statements, except Company B has Interest Expense associated with its Debt, and Company A does not.

Here's what the Income Statements and valuation multiples might look like:

Why P / E Multiples Can Be Misleading

Company A - Financial Snapshot:	Year 1	Year 2	Year 3
Equity Value:	$ 500		
Net Debt:	-		
Enterprise Value:	**$ 500**		
Tax Rate:	35%		
P / E:	17.1 x	16.7 x	15.4 x
EV / EBIT:	11.1 x	10.9 x	10.0 x
EV / EBITDA:	8.5 x	8.1 x	7.1 x

Company A - Income Statement:	Year 1	Year 2	Year 3
Revenue:	$ 400	$ 450	$ 500
Revenue Growth:	*15%*	*13%*	*11%*
Costs of Goods Sold:	136	153	170
Gross Profit:	**264**	**297**	**330**
Gross Margin:	*66%*	*66%*	*66%*
Sales & Marketing:	80	90	100
General & Administrative:	60	70	75
Research & Development:	65	75	85
Depreciation & Amortization:	14	16	20
Total Operating Expenses:	**219**	**251**	**280**
Operating Income:	**45**	**46**	**50**
Operating Margin:	*11%*	*10%*	*10%*
Net Interest Expense:	-	-	-
Other Income / (Expense):	-	-	-
Pre-Tax Income:	**45**	**46**	**50**
Income Taxes:	(16)	(16)	(18)
Net Income:	**$ 29**	**$ 30**	**$ 33**

Company B - Financial Snapshot:	Year 1	Year 2	Year 3
Equity Value:	$ 300		
Net Debt:	200		
Enterprise Value:	**$ 500**		
Tax Rate:	35%		
P / E:	15.4 x	14.9 x	13.2 x
EV / EBIT:	11.1 x	10.9 x	10.0 x
EV / EBITDA:	8.5 x	8.1 x	7.1 x

Company B - Income Statement:	Year 1	Year 2	Year 3
Revenue:	$ 400	$ 450	$ 500
Revenue Growth:	*15%*	*13%*	*11%*
Costs of Goods Sold:	136	153	170
Gross Profit:	**264**	**297**	**330**
Gross Margin:	*66%*	*66%*	*66%*
Sales & Marketing:	80	90	100
General & Administrative:	60	70	75
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Depreciation & Amortization:	14	16	20
Total Operating Expenses:	**219**	**251**	**280**
Operating Income:	**45**	**46**	**50**
Operating Margin:	*11%*	*10%*	*10%*
Net Interest Expense:	(15)	(15)	(15)
Other Income / (Expense):	-	-	-
Pre-Tax Income:	**30**	**31**	**35**
Income Taxes:	(11)	(11)	(12)
Net Income:	**$ 20**	**$ 20**	**$ 23**

Should Company B be trading at P / E multiples that are **10-15% lower** because it's using Debt?

The Debt vs. Equity mix does impact Cost of Equity and WACC, and therefore affects Enterprise Value and Equity Value, but there probably shouldn't be *this much* of an impact.

And that's the problem with relying on P / E multiples: They're affected by different capital structures, different tax rates, and non-core-business activities.

You still use them in some industries, such as commercial banking and insurance, but they are less useful than EV / EBIT and EV / EBITDA multiples.

	EBIT	EBITDA	Net Income
How do you calculate it?	Operating Income on Income Statement	Operating Income on Income Statement + D&A, *always* taken from the Cash Flow Statement	Net Income on Income Statement
Corresponds to...	Enterprise Value	Enterprise Value	Equity Value
Valuation Multiple:	EV / EBIT	EV / EBITDA	P / E (Market Cap / Net Income)
Who has a claim on this money?	Equity investors, debt investors, the government	Equity investors, debt investors, the government	Equity investors
What does it mean?	CORE, recurring business **profitability**, before the impact of capital structure and taxes	Proxy for core, recurring business **cash flow from operations**, before the impact of capital structure and taxes	Profit after taxes, the impact of capital structure (interest), AND non-core business activities
Reflects normal operating expenses?	Yes	Yes	Yes
Reflects impact of capital expenditures (CapEx)?	Yes	No	Yes
Reflects interest income and expense?	No	No	Yes
Reflects taxes?	No	No	Yes
Reflects non-core business activities?	No	No	Yes
***Can sometimes be* closer to...**	Free Cash Flow (Cash Flow from Operations - CapEx) - but only sometimes!	Cash Flow from Operations... but only sometimes!	Generally, no cash flow-based metric.
Use when...	CapEx is more important and/or company is spending a lot to grow quickly and/or you want to include the impact of CapEx	CapEx is smaller % of revenue, doesn't matter as much, and/or you want to normalize companies w/ very different CapEx and D&A standards	Well, try to avoid it if you can... sometimes still useful to look at and compare P/E multiples to others

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Key Rule #9: Different Types of Free Cash Flow

All company valuation comes down to that all-important formula:

Company Value = Cash Flow / (Discount Rate – Cash Flow Growth Rate)

So Cash Flow-based metrics and multiples must be the best, most relevant ones, right?

In theory, yes.

Interview questions on *how to calculate* Free Cash Flow, Unlevered Free Cash Flow, Levered Free Cash Flow, etc., are common.

And you need to know these metrics when completing a Discounted Cash Flow (DCF) analysis, when building leveraged buyout (LBO) models, and when estimating a company's ability to repay debt.

But these metrics are **NOT** as useful when you're **comparing** a company to its peers and valuing it using multiples.

One problem is that these metrics **take more time to calculate** because you can't just take Operating Income and add D&A; you need to project the entire Cash Flow Statement or a good chunk of it.

Another issue is that **the items included *within* these metrics vary a lot**. One company might have a huge add-back for Stock-Based Compensation, and another might have nothing; one company might have huge Deferred Taxes, and another might have nothing.

Finally, if a company uses the Direct Method of preparing its Cash Flow Statement, these metrics take even more time to calculate because you have to modify its CFS so that it starts with Net Income instead.

So these metrics are less ideal for *comparing* companies.

How to Calculate FCF and Its Variations

There are 3 major types of Free Cash Flow, and the idea is very similar for all of them:

How much discretionary cash flow does a company generate?

Most of the items on a company's Cash Flow Statement – everything in Cash Flow from Investing and Cash Flow from Financing – are optional, except for CapEx.

That's why you calculate "Free Cash Flow" by taking Cash Flow from Operations and subtracting CapEx: It tells you how much cash flow the company's core business is generating on a recurring, predictable basis.

But the problem is that FCF also takes into account the company's capital structure, and sometimes you don't want to do that.

Since FCF includes the Net Interest Expense (subtracted before the Net Income line) and Preferred Dividends (subtracted between Net Income and Net Income to Common), it's **only available to Equity investors**.

But you usually want to calculate the "Cash flow available to **ALL** investors," which means that you need to **exclude the Net Interest Expense** and the Preferred Dividends (and income and expenses from side activities).

To do this, you calculate **Unlevered Free Cash Flow** (AKA **Free Cash Flow to Firm**).

The best way to think of it is: "The cash flow available to **ALL** investors in the company."

And then there's **Levered Free Cash Flow**, which is similar to Free Cash Flow, but which subtracts out mandatory Debt principal repayments as well.

Levered FCF gives a slightly better estimate of how much cash flow is **available to *just* the Equity investors**.

Here's how you calculate all these metrics:

- **Free Cash Flow:** Cash Flow from Operations – CapEx.
- **Unlevered Free Cash Flow:** NOPAT + Non-Cash Adjustments and Changes in Working Capital from CFS – CapEx.
- **Levered Free Cash Flow:** Net Income + Non-Cash Adjustments and Changes in Working Capital from CFS – CapEx – (Mandatory?) Debt Repayments.

People disagree over how to calculate Levered FCF because some subtract *all* Debt principal repayments, some subtract only the *mandatory* repayments, and some factor in all Debt *issuances and repayments*.

This disagreement is one reason why we recommend **against** using Levered FCF.

You can calculate all these metrics in *many* different ways. For example, to calculate Unlevered FCF, you could do any of the following:

- **Method #1:** EBIT * (1 – Tax Rate) + Non-Cash Adjustments and Changes in Working Capital from CFS – CapEx.

- **Method #2:** (EBITDA – D&A) * (1 – Tax Rate) + Non-Cash Adjustments and Changes in Working Capital from CFS – CapEx.

- **Method #3:** CFO + (Net Interest Expense and Other Items Between Operating Income and Pre-Tax Income) * (1 – Tax Rate) – CapEx.

To illustrate these calculations, let's say that a company's Income Statement and Cash Flow Statement look like this:

Steel Dynamics - Income Statement:	
Total Net Sales:	$ 7,372.9
Costs of Goods Sold:	6,653.8
Gross Profit:	**719.1**
Selling, General and Administrative Expenses:	272.8
Profit Sharing:	27.8
Amortization of Intangible Assets:	31.8
Impairment Charges:	0.3
Operating Income:	**386.5**
Interest Expense, Net of Capitalized Interest:	127.7
Other (Income) Expense, Net:	(4.0)
Income Before Income Taxes:	**262.8**
Income Taxes:	99.3
Net Income:	**163.5**
Net Loss Attributable to Noncontrolling Interests:	26.0
Net Income Attributable To Steel Dynamics, Inc.:	**$ 189.5**

Steel Dynamics - Cash Flow Statement:	
Operating Activities:	
Net Income:	**$ 163.5**
Adjustments To Reconcile Net Income To Net Cash Provided By Operating Activities:	
Depreciation And Amortization:	230.9
Impairment Charges:	0.3
Equity-Based Compensation:	15.5
Deferred Income Taxes:	30.7
(Gain) / Loss on Disposal of PP&E:	1.1
Changes In Certain Assets and Liabilities:	
Accounts Receivable:	(78.2)
Inventories:	(108.0)
Other Assets:	13.7
Accounts Payable:	40.1
Income Taxes Receivable/Payable:	(12.5)
Accrued Expenses:	15.0
Net Cash Provided By Operating Activities:	**312.2**
Investing Activities:	
Purchases of PP&E (CapEx):	(186.8)
Proceeds / Maturities of Commercial Paper:	31.5
Other Investing Activities:	2.5
Net Cash Used In Investing Activities:	**(152.8)**
Financing Activities:	
Issuance of Current and Long-Term Debt:	424.0
Repayments of Current and Long-Term Debt:	(518.0)
Proceeds from Exercise of Stock Options:	37.5
Contributions from Noncontrolling Investors:	17.9
Distributions to Noncontrolling Investor:	(0.4)
Dividends Paid:	(94.8)
Debt Issuance Costs:	(6.2)
Net Cash Provided By (Used In) Financing Activities:	**(140.1)**
Increase (Decrease) in Cash & Equivalents:	**19.2**
Cash & Equivalents at Beginning of Year:	375.9
Cash & Equivalents at End of Year:	**$ 395.2**

You would calculate **Free Cash Flow** using the following components of the Cash Flow Statement:

Steel Dynamics - Cash Flow-Based Metrics:	
Effective Tax Rate:	35.2%
Cash Flow from Operations:	$ 312.2
(-) Capital Expenditures (CapEx):	(186.8)
Free Cash Flow (FCF):	**$ 125.3**

Steel Dynamics - Cash Flow Statement:	
Operating Activities:	
Net Income:	**$ 163.5**
Adjustments To Reconcile Net Income To Net Cash Provided By Operating Activities:	
Depreciation And Amortization:	230.9
Impairment Charges:	0.3
Equity-Based Compensation:	15.5
Deferred Income Taxes:	30.7
(Gain) / Loss on Disposal of PP&E:	1.1
Changes In Certain Assets and Liabilities:	
Accounts Receivable:	(78.2)
Inventories:	(108.0)
Other Assets:	13.7
Accounts Payable:	40.1
Income Taxes Receivable/Payable:	(12.5)
Accrued Expenses:	15.0
Net Cash Provided By Operating Activities:	**312.2**
Investing Activities:	
Purchases of PP&E (CapEx):	(186.8)
Proceeds / Maturities of Commercial Paper:	31.5
Other Investing Activities:	2.5
Net Cash Used In Investing Activities:	**(152.8)**
Financing Activities:	
Issuance of Current and Long-Term Debt:	424.0
Repayments of Current and Long-Term Debt:	(518.0)
Proceeds from Exercise of Stock Options:	37.5
Contributions from Noncontrolling Investors:	17.9
Distributions to Noncontrolling Investor:	(0.4)
Dividends Paid:	(94.8)
Debt Issuance Costs:	(6.2)
Net Cash Provided By (Used In) Financing Activities:	**(140.1)**
Increase (Decrease) in Cash & Equivalents:	**19.2**
Cash & Equivalents at Beginning of Year:	375.9
Cash & Equivalents at End of Year:	**$ 395.2**

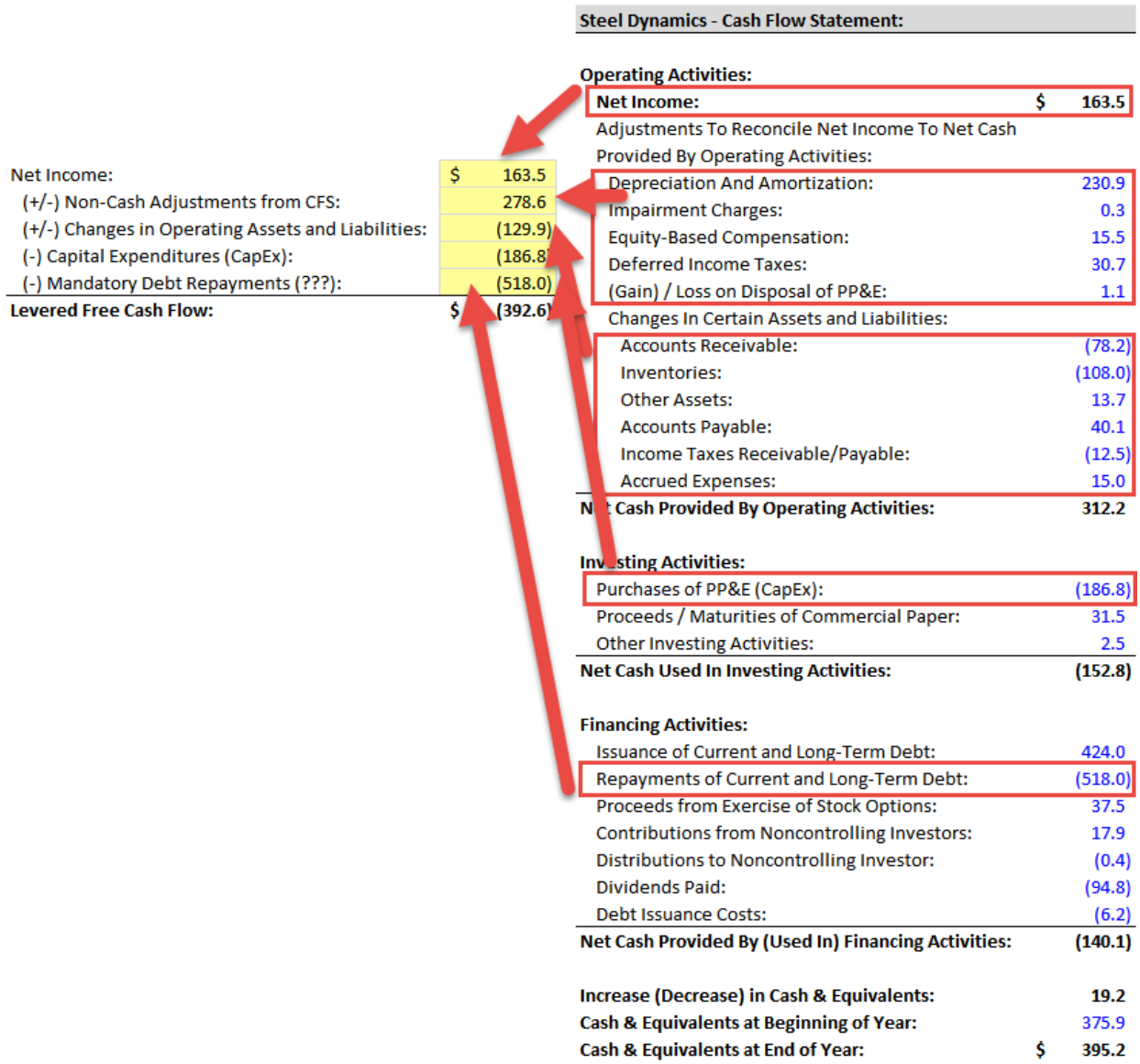
And if the company had Preferred Stock and Preferred Dividends, the Cash Flow from Operations section would start with Net Income to Common instead, so you'd factor them in like that.

Meanwhile, to calculate Unlevered Free Cash Flow or Free Cash Flow to Firm, you would use these components of the CFS and Operating Income from the Income Statement:

Operating Income (EBIT):	$ 386.5
Net Operating Profit After Taxes (NOPAT):	250.6
(+/-) Non-Cash Adjustments from CFS:	278.6
(+/-) Changes in Operating Assets and Liabilities:	(129.9)
(-) Capital Expenditures (CapEx):	(186.8)
Unlevered Free Cash Flow:	**$ 212.4**

Steel Dynamics - Cash Flow Statement:	
Operating Activities:	
Net Income:	**$ 163.5**
Adjustments To Reconcile Net Income To Net Cash	
ided By Operating Activities:	
Depreciation And Amortization:	230.9
Impairment Charges:	0.3
Equity-Based Compensation:	15.5
Deferred Income Taxes:	30.7
(Gain) / Loss on Disposal of PP&E:	1.1
hanges In Certain Assets and Liabilities:	
Accounts Receivable:	(78.2)
Inventories:	(108.0)
Other Assets:	13.7
Accounts Payable:	40.1
Income Taxes Receivable/Payable:	(12.5)
Accrued Expenses:	15.0
Net Cash Provided By Operating Activities:	**312.2**
Investing Activities:	
Purchases of PP&E (CapEx):	(186.8)
Proceeds / Maturities of Commercial Paper:	31.5
Other Investing Activities:	2.5
Net Cash Used In Investing Activities:	**(152.8)**
Financing Activities:	
Issuance of Current and Long-Term Debt:	424.0
Repayments of Current and Long-Term Debt:	(518.0)
Proceeds from Exercise of Stock Options:	37.5
Contributions from Noncontrolling Investors:	17.9
Distributions to Noncontrolling Investor:	(0.4)
Dividends Paid:	(94.8)
Debt Issuance Costs:	(6.2)
Net Cash Provided By (Used In) Financing Activities:	**(140.1)**
Increase (Decrease) in Cash & Equivalents:	**19.2**
Cash & Equivalents at Beginning of Year:	375.9
Cash & Equivalents at End of Year:	**$ 395.2**

And then for Levered Free Cash Flow or Free Cash Flow to Equity you would use these components of the Cash Flow Statement:



Net Income:	$ 163.5
(+/-) Non-Cash Adjustments from CFS:	278.6
(+/-) Changes in Operating Assets and Liabilities:	(129.9)
(-) Capital Expenditures (CapEx):	(186.8)
(-) Mandatory Debt Repayments (???):	(518.0)
Levered Free Cash Flow:	**$ (392.6)**

Steel Dynamics - Cash Flow Statement:	
Operating Activities:	
Net Income:	**$ 163.5**
Adjustments To Reconcile Net Income To Net Cash Provided By Operating Activities:	
Depreciation And Amortization:	230.9
Impairment Charges:	0.3
Equity-Based Compensation:	15.5
Deferred Income Taxes:	30.7
(Gain) / Loss on Disposal of PP&E:	1.1
Changes In Certain Assets and Liabilities:	
Accounts Receivable:	(78.2)
Inventories:	(108.0)
Other Assets:	13.7
Accounts Payable:	40.1
Income Taxes Receivable/Payable:	(12.5)
Accrued Expenses:	15.0
Net Cash Provided By Operating Activities:	**312.2**
Investing Activities:	
Purchases of PP&E (CapEx):	(186.8)
Proceeds / Maturities of Commercial Paper:	31.5
Other Investing Activities:	2.5
Net Cash Used In Investing Activities:	**(152.8)**
Financing Activities:	
Issuance of Current and Long-Term Debt:	424.0
Repayments of Current and Long-Term Debt:	(518.0)
Proceeds from Exercise of Stock Options:	37.5
Contributions from Noncontrolling Investors:	17.9
Distributions to Noncontrolling Investor:	(0.4)
Dividends Paid:	(94.8)
Debt Issuance Costs:	(6.2)
Net Cash Provided By (Used In) Financing Activities:	**(140.1)**
Increase (Decrease) in Cash & Equivalents:	**19.2**
Cash & Equivalents at Beginning of Year:	**375.9**
Cash & Equivalents at End of Year:	**$ 395.2**

If the company had Preferred Stock and Preferred Dividends, you'd start the calculation with Net Income to Common instead, and factor them in like that.

Free Cash Flow (FCF) is common in standalone financial statement analysis when you're trying to estimate a company's recurring cash flow.

Unlevered FCF is most common in the DCF analysis and is the cleanest way to estimate a company's value to *all* investors.

Levered FCF is quite rare, but you could use it in a different type of DCF analysis and also to assess a company's ability to service its debt.

	Free Cash Flow (FCF)	Unlevered Free Cash Flow (Unlevered FCF)	Levered Free Cash Flow (Levered FCF)
Also Known As:	Free Cash Flow (FCF)	Free Cash Flow to Firm (FCFF)	Free Cash Flow to Equity (FCFE)
How do you calculate it?	Cash Flow from Operations - CapEx	NOPAT + Non-Cash Adjustments and Changes in Working Capital from CFS - CapEx	Net Income + Non-Cash Adjustments and Changes in Working Capital from CFS - CapEx - (Mandatory?) Debt Repayments
How IFRS and the Direct Method of CFS preparation make the calculation more annoying:	If interest expense and taxes do **NOT** impact CFO, you must factor them in anyway! Also, you may have to go hunting for non-cash adjustments and working capital items.	You may have to go hunting for non-cash adjustments and working capital items.	If interest expense does **NOT** impact CFO, you must factor it in anyway! Also, you may have to go hunting for non-cash adjustments and working capital items.
Corresponds to...	Equity Value	Enterprise Value	Equity Value
Valuation Multiple:	P / FCF per Share; or Equity Value / FCF	Enterprise Value / Unlevered FCF	P / Levered FCF per Share; or Equity Value / Levered FCF
Most commonly used for:	Standalone financial statement analysis.	DCF analysis.	Very little; DCF in certain industries.
Who can "get paid" with this money?	Equity investors	Equity investors and debt / preferred investors	Equity investors
What does it mean?	How much discretionary cash flow does the company generate, after interest but before debt principal repayments?	How much discretionary cash flow does the company generate, before both interest expense and debt principal repayments?	How much discretionary cash flow does the company generate, AFTER servicing ALL of its debt-related expenses?
Reflects normal operating expenses?	Yes	Yes	Yes
Reflects impact of capital expenditures (CapEx)?	Yes	Yes	Yes
Reflects interest income and expense?	Yes	No	Yes
Reflects debt principal repayments?	No	No	Only mandatory repayments.
Reflects taxes?	Yes	Yes	Yes
Reflects non-core business activities?	Yes	No	Yes

	EBIT	EBITDA	Net Income	Free Cash Flow (FCF)	Unlevered Free Cash Flow (Unlevered FCF)	Levered Free Cash Flow (Levered FCF)
How do you calculate it?	Operating Income on Income Statement	Operating Income on Income Statement + D&A, *always* taken from the Cash Flow Statement	Net Income on Income Statement	Cash Flow from Operations - CapEx	NOPAT + Non-Cash Adjustments and Changes in Working Capital from CFS - Capital Expenditures	Net Income + Non-Cash Adjustments and Changes in Working Capital from CFS - Capital Expenditures - (Mandatory?) Debt Repayments
Corresponds to...	Enterprise Value	Enterprise Value	Equity Value	Equity Value	Enterprise Value	Equity Value
Valuation Multiple:	EV / EBIT	EV / EBITDA	P / E (Market Cap / Net Income)	P / FCF per Share; or Equity Value / FCF	Enterprise Value / Unlevered FCF	P / Levered FCF per Share; or Equity Value / Levered FCF
Who has a claim on this money?	Equity investors, debt investors, the government	Equity investors, debt investors, the government	Equity investors	Equity investors	Equity investors and debt investors	Equity investors
What does it mean?	CORE, recurring business **profitability**, before the impact of capital structure and taxes	Proxy for core, recurring business **cash flow from operations**, before the impact of capital structure and taxes	Profit after taxes, the impact of capital structure (interest), AND non-core business activities	How much discretionary cash flow does the company generate, after interest but before debt principal repayments?	How much discretionary cash flow does the company generate, before both interest expense and debt principal repayments?	How much discretionary cash flow does the company generate, AFTER servicing ALL of its debt-related expenses?
Reflects normal operating expenses?	Yes	Yes	Yes	Yes	Yes	Yes
Reflects impact of capital expenditures (CapEx)?	Yes	No	Yes	Yes	Yes	Yes
Reflects interest income and expense?	No	No	Yes	Yes	No	Yes
Reflects taxes?	No	No	Yes	Yes	Yes	Yes
Reflects non-core business activities?	No	No	Yes	Yes	No	Yes
***Can sometimes be* closer to...**	Free Cash Flow (Cash Flow from Operations - CapEx) - but only sometimes!	Cash Flow from Operations... but only sometimes!	Generally, no cash flow-based metric.	N / A	N / A	N / A
Use when...	CapEx is more important and/or company is spending a lot to grow quickly and/or you want to include the impact of CapEx.	CapEx is smaller % of revenue, doesn't matter as much, and/or you want to normalize companies w/ very different CapEx and D&A standards.	Well, try to avoid it if you can... sometimes still useful to look at and compare P/E multiples to others.	Standalone financial statement analysis.	DCF analysis.	Very little; DCF in certain industries.

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Key Rule #10: Other Metrics and Multiples

We've covered the most common valuation metrics and multiples, but there are always more.

These other multiples are **far less important**, so you can consider this section "optional."

You can divide this group into "Other Metrics and Multiples" and "Industry-Specific Metrics and Multiples."

Two other Enterprise Value-based multiples that come up in *many* industries are **EV / NOPAT** and **EV / IC** (IC = Invested Capital, or Equity + Debt + Preferred Stock + possibly other investors).

NOPAT pairs with Enterprise Value because it excludes Interest and Preferred Dividends and is, therefore, available to *all* investors. And Invested Capital, by definition, reflects *all* investors.

EV / NOPAT is not terribly common because it's halfway between EBIT and Net Income, as it reflects Depreciation and taxes, but not the full CapEx spending or Working Capital.

So it's not great for comparison or "cash flow approximation" purposes, though it has its uses (mostly if there's a significant difference in tax rates and you want to factor that in).

EV / IC is more useful because it tells you **how valuable a company is relative to the capital it has raised over the years**.

For example, if a firm has raised $1,000 total of Equity, Debt, and Preferred Stock, is its Enterprise Value now more or less than that?

It tells you how *efficiently* a company is using its capital, and it tends to be correlated with Return on Invested Capital (ROIC), which equals NOPAT / Invested Capital.

EV / IC is most useful for companies in **Asset-intensive industries** like manufacturing, airlines, transportation/logistics, and some telecom sectors. It's not meaningful for software, services, or biotech companies because they're more dependent on employees than capital.

A few other Equity Value-based metrics and multiples include the **PEG Ratio** and the **P / BV multiple** (Equity Value / Book Value, or Price per Share / Book Value per Share).

With the PEG Ratio, you take a company's P / E multiple and divide by its Net Income growth rate.

For example, if the company's Net Income is $100 this year and projected to be $110 next year, its growth rate is 10%. Its PEG Ratio at different P / E multiples would be:

- **P / E Multiple of 10x** = 10x / (10% * 100) = 1.00
- **P / E Multiple of 8x** = 8x / (10% * 100) = 0.80
- **P / E Multiple of 12x** = 12x / (10% * 100) = 1.20

PEG Ratios tell you *how cheap or expensive a company is* ***relative to its Net Income growth rate***. If the ratio is below 1.00, the company might be a good value; if it's above 1.00, it might be more expensive.

Lower PEG Ratios mean you're getting more growth for your money, while higher PEG Ratios indicate less growth for your money.

Although the PEG Ratio has its uses, it's not that common because it suffers from the same problems as the P / E multiple: It's affected by different tax rates, capital structures, non-core business activities, and so on.

The **P / BV**, or Price per Share / Book Value per Share, or Equity Value / Book Value, multiple is more common for *certain* types of companies.

The idea is similar to the **EV / IC** multiple, but P / BV corresponds to **only equity investors**.

To calculate it, you take the company's Equity Value and divide it by its **Common Shareholders' Equity** (i.e., the Book Value of Equity on its Balance Sheet, excluding Preferred Stock and Noncontrolling Interests).

It tells you how the market value of a company's Equity compares to the Equity shown on its Balance Sheet, and how efficiently the company has used its capital.

An "average" company's P / BV multiple should be around 1x, while "cheap" companies trade at under 1x, and "expensive" companies trade at more than 1x.

However, the P / BV multiple doesn't mean much for many companies because most of their value is NOT linked directly to the Balance Sheet.

P / BV is most meaningful for commercial banks and insurance firms, which have totally different accounting and valuation methodologies and are Balance Sheet-driven.

It is sometimes meaningful for other capital-intensive industries, and it's completely meaningless for service/labor/IP-oriented industries.

It's correlated with **Return on Equity**, which is defined as Net Income / Average Equity (or Net Income to Common / Average Common Shareholders' Equity if there's Preferred Stock).

Companies that generate higher Net Income relative to their Equity tend to trade at higher P / BV multiples.

Industry-Specific Metrics and Multiples

Finally, **industry-specific** metrics and multiples also exist.

Sometimes, they exist **because nothing else works:** If a biotech or technology startup has no revenue yet, you can't use EV / EBITDA or EV / Revenue to value it.

You have to use some other metric, such as Unique Visitors or Monthly Active Users or Registered Users.

Other times, they exist because **modified financial metrics** may be more meaningful, or because **operational metrics** are just as relevant as financial ones.

Most industries use standard valuation multiples, but a few use very different ones:

- **The MOST Different Sector:** Commercial Banks and Insurance Firms – There are MANY different metrics and multiples, you don't use the DCF, and the concept of Enterprise Value doesn't apply.

- **Moderately Different:** Metals & Mining, Oil & Gas, and Real Estate and REITs (real estate investment trusts). Standard multiples apply, but there are also new ones and new methodologies.

- **Somewhat Different:** Healthcare, Airlines, Power & Utilities, and Cleantech. The multiples are standard, but many operational metrics are different.

- **Quite Standard:** Consumer/Retail, Restaurants, Chemicals, Construction, Transportation, Technology, and Media/Telecom.

Here is a **quick summary** for each of those segments:

Financial Institutions (FIG)

For commercial banks and insurance firms, the concept of "Enterprise Value" doesn't exist because you can't separate operational and financial items. A Loan or Investment is a non-core-business Asset to a normal company, but it's an operational Asset to a bank.

You rely more on P / E, P / BV, P / TBV (Equity Value / Tangible Book Value) multiples, the Dividend Discount Model (DDM) rather than the DCF, and for life insurance, the Embedded Value methodology (a super-long-term type of DCF).

For other sectors within financial institutions – asset management firms, investment banks, brokerages, and fin-tech companies – all the standard metrics, multiples, and methodologies apply, the DCF still works, and Enterprise Value is still meaningful.

Metals & Mining

You still use standard multiples here, but **Reserves**, **Resources**, and **Production** are very important operational metrics as well.

"Reserves" have a higher probability of being extracted than Resources, and Resources can be split into Inferred, Measured, and Indicated.

Mining companies that operate in different segments (e.g., gold, zinc, and copper) often convert everything into "Mineral Equivalent" Resources and Reserves.

You can then use valuation multiples like Enterprise Value / Mineral Equivalent Reserves or Enterprise Value / Mineral Equivalent Production.

The **NAV Model**, which is a super-long-term DCF without a Terminal Value (you assume the mine simply runs out of resources), is also common.

Oil & Gas

Just like in mining, you can make multiples out of metrics like Reserves and Production: EV / Proved Reserves and EV / Daily Production, for example.

Some "upstream" (exploration & production) companies capitalize the cost of all exploration, while others expense the unsuccessful portion, so you use **EBITDAX** (EBITDA + Exploration Expense) to normalize these treatments.

For midstream companies (pipeline companies that transport oil), "Distributable Cash Flow" is very important because these companies are structured as Master Limited Partnerships (MLPs).

Downstream companies (ones that refine oil and gas and turn it into fuel) tend to use standard metrics and multiples.

Real Estate and REITs

Most segments – gaming, lodging, and homebuilding – use standard metrics and multiples.

Real Estate Investment Trusts (REITs) are companies that buy, sell, develop, and renovate properties constantly, and act like "private equity firms for properties."

Since massive Depreciation and constant Gains and Losses on property sales distort their Net Income, you use **Funds from Operations (FFO)**, which is Net Income + D&A – Gains + Losses, instead of Net Income. It's still *after* Interest Expense, so the multiple is Equity Value / FFO.

There's also **Adjusted Funds from Operations (AFFO)**, which adjusts for other non-cash and non-recurring items.

There is a **Net Asset Value (NAV)** model for REITs as well, but it's based on valuing each property individually and determining the REIT's value from that. So it's a Balance Sheet valuation rather than a super-long-term DCF.

Healthcare

There are no major valuation differences, but you'll see far-in-the-future DCF analyses for startup biotech firms that are not yet generating Revenue, and for more established companies, you'll see different metrics such as $ per Patient, # of Beds, and so on.

Airlines

You often use EBITDAR and (EV + Capitalized Operating Leases) / EBITDAR because some airlines rent their planes, some own them, and some do a mix of both.

The operational metrics are also different since Revenue per Available Seat Mile (RASM) or per Kilometer, the Load Factor, Revenue Passenger Miles (RPM) or Kilometers, and the Passenger Count all matter a lot.

Power & Utilities

You use standard multiples, but the metrics differ: one key one is **Megawatt (MW) Supply**, defined as Existing Generation – Expected Retirements + Expected Additions + Net Imports.

You also pay a lot of attention to Cost Recovery, Plant Availability and Reliability, and Outage Rates.

Cleantech

Similar to traditional Power & Utility companies, **power generated** and related metrics are quite important, and many asset prices are quoted on a $ per KW basis.

Consumer/Retail

The valuation multiples are all standard, and (EV + Capitalized Operating Leases) / EBITDAR is common when some companies rent their stores, and others own them.

Important operating metrics include Same-Store Sales, Inventory Turnover, Sales per Store, and Sales per Square Foot or Square Meter.

Chemicals

Valuation multiples are very standard; a key operating metric is **production capacity**.

Construction Services

The valuation multiples are standard, but the key operating metrics include the **Backlog** (how much work has been signed but not yet completed), **Option Years** (years of potential work over the minimum in the Backlog), and the **Book to Bill Ratio** (the ratio of work a company is signing vs. delivering).

Transportation & Logistics and Maritime/Shipping

The multiples are all standard, but valuation can get tricky because many shipping companies are structured as MLPs. So you have to think about Distributable Cash Flow and *which* sets of investors are entitled to different cash flows from the company.

Key metrics include Shipping Capacity, Contract Length, Utilization Rates, Average Length of Haul, # of Drivers or # of Ships, and Revenue per Mile or Kilometer.

Technology

The multiples are standard for established companies, but for pre-revenue startups and mobile/gaming companies, you'll see metrics like Unique Visitors, Monthly Active Users, Mobile Users, and Subscribers, all of which pair with Enterprise Value.

Media / Telecom

The standard multiples all apply, but **# Subscribers** is vital, and EV / Subscribers is a common multiple. Other key metrics include Average Revenue per User (ARPU), Subscriber Penetration, Renewal Rates, # Access Lines, and Access Line Growth.

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Interview Questions

Questions on **valuation** are among the most common ones in investment banking interviews, second only to accounting.

While many valuation questions concern the DCF analysis and specific valuation methodologies, many are also about **the underlying concepts**: Equity Value, Enterprise Value, and valuation multiples.

Over time, these questions have also become significantly more difficult. You used to be able to memorize a few multiples and the Enterprise Value calculation and be fine, but now you need to **understand the concepts** at a deeper level.

The Concepts of Equity Value and Enterprise Value

1. What do Equity Value and Enterprise Value MEAN? Don't explain how you calculate them – tell me what they mean!

Equity Value represents the value of **EVERYTHING** the company has (i.e., **ALL** its Assets), but only to **COMMON EQUITY INVESTORS** (i.e., shareholders).

Enterprise Value represents the value of the company's **CORE BUSINESS OPERATIONS** (i.e., **ONLY** the Assets related to its core business), but to **ALL INVESTORS** (Equity, Debt, Preferred, and possibly others).

2. So why do you look at both of them? Isn't Enterprise Value always more accurate?

Neither one is "better" or "more accurate" – they represent different concepts, and they're important to different types of investors.

Enterprise Value and EV-based multiples have some advantages because they are not affected by changes in the company's capital structure *as much as* Equity Value and Equity Value-based multiples are affected.

However, common shareholders and institutional investors often focus on Equity Value because they care more about what a company's *shares* are worth. And if you're valuing a public company, you'll always have to "back into" its Implied Equity Value and its Implied Share Price so you can compare that to its current share price.

3. What's the difference between Current Enterprise Value and Implied Enterprise Value?

Current Enterprise Value is what "the market" as a whole thinks the company's core business operations are worth to all investors; Implied Enterprise Value is what *you* think it's worth based on *your* views and analysis.

You calculate Current Enterprise Value for public companies by starting with Current Equity Value, subtracting non-core-business Assets, and adding Liability and Equity line items that represent different investor groups.

But you calculate Implied Enterprise Value based on valuation methodologies such as the Discounted Cash Flow (DCF) analysis, comparable public companies, and precedent transactions.

4. Why might a company's Current Enterprise Value be different from its Implied Enterprise Value?

Remember that **Company Value** = Cash Flow / (Discount Rate – Cash Flow Growth Rate).

Everyone agrees on a company's current Cash Flow, but you might disagree with the market on the Discount Rate or Cash Flow Growth Rate.

In most cases, your view of a company's value will be different than the market's view because you believe its cash flow will grow at a faster or slower rate.

5. Everyone knows how you move from Equity Value to Enterprise Value.

But WHY do you subtract Cash, add Debt, add Preferred Stock, and so on?

You **subtract** Assets when they represent **non-core-business Assets**. Cash and Investments are examples, but Equity Investments (AKA Associate Companies), Assets Held for Sale, and Assets Associated with Discontinued Operations also count.

You **add** Liability & Equity line items when they represent **different investor groups** beyond the common shareholders. Debt and Preferred Stock are the most common examples, but Unfunded Pensions and Capital Leases (among others) also qualify.

6. Let's say you're about to buy a house using a $600K mortgage and a $200K down payment. What are the real-world analogies for Equity Value and Enterprise Value in this case?

The “Enterprise Value” here is the $800K total value of the house, and it corresponds to *just* the “core value” of the house: The land, the foundation, the walls, rooms, etc.

The “Equity Value” is the $200K down payment you’re making, and it corresponds to everything above PLUS any “non-core” Assets you get along with the house: Random tools and garden supplies, lawn chairs, or anything else that you’re planning to sell immediately.

7. Can a company's Equity Value ever be negative?

Trick question. A company’s *Current Equity Value* cannot be negative because it is based on Shares Outstanding * Current Share Price, and neither of those can be negative. It also can’t be negative for private companies.

However, its *Implied Equity Value* can be negative because you use *your* assumptions to calculate that. So if the company’s Implied Enterprise Value is $0, for example, and it has more Debt than Cash, its Implied Equity Value will be negative.

8. Can a company's Enterprise Value ever be negative?

Yes. Both Current and Implied Enterprise Value could easily be negative – for example, a company might have more Cash than its Market Cap (Current Equity Value) and no Debt. And perhaps your Implied Enterprise Value is the same as, or very close to, its Current Enterprise Value.

9. Why do financing-related events such as issuing Dividends or raising Debt not affect Enterprise Value?

Because Enterprise Value reflects the value of a company’s core business operations to ALL investors in the company.

That definition means that if something does **not** affect the company’s core business, it won’t affect Enterprise Value.

Issuing Dividends, issuing Stock, repurchasing Stock, issuing/repaying Debt, etc. do **not** impact a company’s core business, so they do not affect Enterprise Value.

Note that in reality, there will still be a small impact on Enterprise Value; this is just the theory.

10. Let's say you determine a company's Implied Value with the cash flow formula: Company Value = Cash Flow / (Discount Rate – Cash Flow Growth Rate).

Will this give you a company's Implied Equity Value or Implied Enterprise Value?

It depends on the type of Cash Flow and the Discount Rate you are using. If you're using Cash Flow that's available to **ALL** investors (i.e., Unlevered FCF or Free Cash Flow to Firm), and WACC for the Discount Rate, this formula will produce the Implied Enterprise Value.

If you're using Cash Flow that's available **ONLY** to equity investors (i.e., Levered FCF or Free Cash Flow to Equity), and Cost of Equity for the Discount Rate, this formula will produce the Implied Equity Value.

11. If financing-related events do not affect Enterprise Value, what DOES affect it?

Only changes to a company's core business will affect Enterprise Value. For example, the company wins a major new customer contract, or it announces higher-than-expected sales, or it closes a factory, or it announces positive results from an expansion strategy into Africa.

But remember that this is all *in theory*. In reality, financing changes will still make a small impact on Enterprise Value.

12. If a company wins a major contract with a new customer, will ONLY Enterprise Value change? Or will Equity Value also change?

Equity Value will change as well. The whole point of Equity Value is that it is affected by **BOTH** operational and financial changes, whereas Enterprise Value is affected by **ONLY** operational changes (in theory).

13. Why does Enterprise Value NOT necessarily represent the "true cost" to acquire a company?

First, because the buyer may not necessarily have to repay the seller's Debt – in 99% of cases, they do, or they have to "refinance it" by replacing it with new Debt, but there are exceptions.

Second, the buyer may not "get" the seller's entire Cash balance. The seller needs a certain minimum amount of Cash to continue operating, and so the seller's Cash may not reduce the effective purchase price 1-for-1.

Finally, the buyer has to pay additional fees for M&A advisory, accounting, legal services, and financing to acquire another company, and none of those is reflected in Enterprise Value.

14. In theory, if Companies A and B are the same in all respects, but Company A is financed with 100% Equity, and Company B is financed with 50% Equity and 50% Debt, their Enterprise Values will be the same.

Why is this NOT true in reality?

Because a company's capital structure, whether current, optimal, or targeted, impacts the Discount Rate you use to calculate the Implied Enterprise Value (and by extension, the Discount Rate "the market as a whole" uses to value a company for its Current Enterprise Value).

Not only do the *percentages* of Equity, Debt, and Preferred Stock change WACC, but the *Costs* of all these items also change as the company's capital structure changes.

For example, more Debt will initially reduce WACC because Debt is cheaper than Equity. But past a certain point, additional Debt will start to increase WACC because the risk to *all* investors starts increasing at that stage.

Enterprise Value will be **LESS** affected by capital structure changes than Equity Value, but there will still be *some* impact even from relatively small changes.

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How Events Impact Equity Value and Enterprise Value

These questions can be **surprisingly tricky** even if you understand the definitions of Equity Value and Enterprise Value and all the common scenarios.

But that's why you signed up for this guide – to get practice with the trickiest questions!

1. A company issues $200 million in new shares. How do Equity Value, Enterprise Value, EV / EBITDA, and P / E change?

Equity Value increases by $200 million because of the new shares, but Enterprise Value stays the same because the $200 million of extra Cash offsets the higher Equity Value.

The P / E multiple increases, but EV / EBITDA stays the same.

2. A company issues $200 million in new shares, but it will use $100 million from the proceeds to issue Dividends to shareholders. How does everything change?

In this case, Equity Value increases by $200 million but then falls by $100 million because Dividends reduce Equity Value, so Equity Value is up by only $100 million.

The company ends up with $100 million in cash. Enterprise Value stays the same because, once again, the extra Cash offsets the higher Equity value.

The P / E multiple increases, but by less than in the previous question, and EV / EBITDA stays the same.

3. The company decides to use the $200 million to acquire another business for $100 million instead. How does everything change?

Once again, Equity Value increases by $200 million initially, and Enterprise Value does not change. However, after the company spends $100 million of Cash to acquire another company – **a core-business Asset** – its Enterprise Value will increase by $100 million.

Its Equity Value will **NOT** change in this step because Equity Value does not distinguish between core and non-core Assets; it includes the values of *all* Assets.

So the company's Equity Value increases by $200 million, its Enterprise Value increases by $100 million, and both the P / E multiple and the EV / EBITDA multiple increase.

4. What if the company uses the $100 million to acquire an Asset rather than an entire company?

Once again, Equity Value increases by $200 million initially and does not change after the Asset acquisition because the *type* of Asset acquired is irrelevant to Equity Value.

If this acquired Asset is a **core-business Asset** – for example, a factory – then the company's Enterprise Value will increase by $100 million. If it is **not** – for example, a short-term investment – then the company's Enterprise Value will not change.

So regardless of the classification, the P / E multiple increases. But the EV / EBITDA multiple may or may not increase, depending on the type of Asset acquired.

5. What changes with everything above if the company raises $200 million in Debt to do this instead?

The main difference is that **Equity Value no longer changes**, and so the P / E multiple no longer changes. Enterprise Value also doesn't change because the extra Cash and extra Debt cancel each other out.

However, as in the previous questions, if the company uses the Cash to acquire another company or other core-business Assets, Enterprise Value and EV / EBITDA both increase.

If the company raises $200 million of Debt to issue $100 million in Dividends, Enterprise Value and EV / EBITDA will stay the same through all of that, but Equity Value will decrease by $100 million because of the Dividends, and so the P/E multiple will also decrease.

6. Let's say the company raises $200 million in Debt to acquire another company for a purchase price of $200 million. The other company's Common Shareholders' Equity is exactly $200 million. How does everything change?

In the first step – a $200 million Debt issuance – neither Equity Value nor Enterprise Value will change.

In the second step – an acquisition of another company for $200 million when its CSE is also $200 million – the company's Enterprise Value will increase by $200 million because this other company counts as a core-business Asset.

So the P / E multiple stays the same and the EV / EBITDA multiple increases.

7. How is this scenario different if the purchase price is still $200 million, but the other company has only $100 million in Common Shareholders' Equity?

The only difference is that now the company has to record $100 million of Goodwill (or Other Intangible Assets, or a combination of both) on its Balance Sheet.

However, both of those are core-business Assets, so Enterprise Value still increases by $200 million, and everything else is the same as in the previous question.

8. What happens to everything if a company issues $100 in Dividends?

Equity Value decreases by $100 million, but Enterprise Value stays the same because the lower Equity Value and lower Cash balance cancel each other out. Also, the Cash used to issue these Dividends is a non-core-business Asset.

As a result, the P / E multiple falls, but the EV / EBITDA multiple stays the same.

9. A company has a Current Equity Value of $200, $50 in Cash, and $100 in Debt. If the company spends $25 of its Cash balance to purchase PP&E, how does everything change?

The company's Current Enterprise Value is: $200 + $100 – $50 = $250.

Its Equity Value won't change when it uses $25 of Cash to purchase PP&E because Cash and PP&E are the same – just Assets – from the perspective of Equity Value.

Its Enterprise Value will increase by $25 because the company has converted a non-core-business Asset into a core-business Asset. $200 + $100 – $25 = $275, so its Enterprise Value is now $275.

As a result, its P / E multiple stays the same, but its EV / EBITDA multiple increases.

10. A company has excess Cash. What are the valuation implications if it uses that Cash to repurchase shares vs. repay Debt?

Enterprise Value won't change for either one. The reduced Cash balance offsets the reduced Equity Value, and the reduced Cash Balance also offsets the reduced Debt balance.

However, Equity Value will decrease if the company repurchases shares.

So in a share repurchase, Equity Value and the P / E multiple will fall, but in a Debt repayment, they'll stay the same. And Enterprise Value and EV / EBITDA will stay the same for everything.

11. A CEO finds $100 of Cash on the street and adds it to the company's bank account. How do Equity Value and Enterprise Value change?

Equity Value will increase by $100 because you have to attribute this "free Cash" to *some* investor group, and Equity investors make the most sense because Equity on the Balance Sheet also represents what the company has saved up internally from its operations.

Enterprise Value will not change because Cash is a non-core-business Asset, and the extra Cash offsets the higher Equity Value in the calculation.

12. A company issues a press release indicating that it expects its revenue to grow at 20% rather than its previous estimate of 10%. How does everything change?

This represents a difference in the company's **core business**: It expects higher sales growth.

As a result, both its Enterprise Value and Equity Value will increase. Its Equity Value will increase because the company's Total Assets are more valuable if they are expected to generate higher growth.

And the Enterprise Value will increase because its *core-business Assets* are certainly more valuable if they're expected to generate higher growth.

The Intuition: If a company announces higher-than-expected growth, its share price almost always jumps up, reflecting a higher Equity Value and a higher Enterprise Value.

13. When there's an operational change, how can you determine whether Equity Value or Enterprise Value will change by more?

Generally, Enterprise Value will change by more because it is affected **only** by these operational changes. Since Equity Value is affected by both financial and operational changes, operational changes tend to make less of an impact.

14. Will operational changes impact a company's Current or Implied Enterprise Value by more?

Operational changes will tend to impact a company's **Implied Enterprise Value** – your estimate of the company's value based on your views – by more because you can *immediately* reflect your views by revising your calculations.

On the other hand, sometimes it takes time for "the market" to reflect these operational changes fully, and so the Current Enterprise Value will take more time to change.

15. You've explained that Equity Value represents the value of ALL assets.

If that's the case, why doesn't a Debt issuance boost Equity Value? After all, if a company raises $100 in Debt, it gets $100 in extra Cash.

This is a trick question because the interviewer doesn't state the **LAST PART** of the definition: "The value of **ALL** assets but only to **EQUITY INVESTORS**."

And that last part explains this effect: When a company's Assets increase, if that increase **is funded by Debt** (or any other non-equity investor), then **Equity Value will not increase**.

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Valuation Multiples

Questions on valuation multiples seem easy at first glance, but they can be surprisingly tricky if you don't understand the **fundamental concepts** at a deep level.

For example, do you understand how a valuation multiple is both shorthand for a cash flow-based valuation, and also a way to compare different companies?

Do you understand the trade-offs of different metrics and multiples? What about the exceptions and special cases?

Test yourself with the full set of questions below:

1. What IS a valuation multiple?

A valuation multiple is **shorthand** for a company's value based on its cash flows, cash flow growth rate, and Discount Rate. Normally, you value a company with this formula:

Company Value = Cash Flow / (Discount Rate – Cash Flow Growth Rate)

Instead of providing all that information, you can use a number like "10x" and express it in a condensed way.

You can also think of valuation multiples as "per-square-foot" or "per-square-meter" values when buying a house: They help you **compare** houses, or companies, of different sizes and see how expensive or cheap similar houses, or companies, are.

2. A company trades at a valuation multiple of 13x EV/EBITDA (based on its Current Enterprise Value). What does that mean?

By itself, this number means nothing at all. It means something **only in relation to other companies and their multiples**.

For example, if other, similar companies in the industry with similar growth profiles are trading at multiples of 10x EV/EBITDA, then this company might be overvalued.

But if those other companies are trading at multiples of 16x EV/EBITDA, then perhaps this company is undervalued.

A discrepancy in multiples is like a clue in a murder mystery: It points your investigation in the right direction, but it doesn't solve the mystery by itself.

3. How can you use valuation multiples in real life?

The most common usage is to calculate valuation multiples for similar companies ("Comparable Company Analysis" or "Public Company Comparable Analysis") and see how the company you're analyzing stacks up (see the previous question).

But you can also use valuation multiples to determine a company's **yield**. For example, if a company has a P/E multiple of 10x, that means you earn 1/10, or 10%, for each dollar you invest in its Equity.

So if you buy a share of the company for $10.00, you "get" $1.00 of Net Income (though the company won't necessarily *distribute* that much in cash).

This same concept applies to Enterprise Value-based multiples, but you have to assume that you purchase $1.00 of the company's *entire capital structure* instead of just its shares.

Finally, you can use multiples to determine a company's *implied* FCF growth rate – the rate at which *the market* expects it to grow.

Let's say a company's EV / EBITDA is 12x. Its Current Enterprise Value is $12,000, and its EBITDA is $1,000. Its Unlevered Free Cash Flow is $500, and the appropriate Discount Rate is 10%.

Since Company Value = Cash Flow / (Discount Rate – Cash Flow Growth Rate), you can say:

$12,000 = $500 / (10% – FCF Growth Rate)

$12,000 * (10% – FCF Growth Rate) = $500

$12,000 * 10% – $12,000 * FCF Growth Rate = $500

$1,200 – $12,000 * FCF Growth Rate = $500

$12,000 * FCF Growth Rate = $700

FCF Growth Rate = 5.8%

This result tells you that **the market expects this company's cash flows to grow at around 5.8% per year into the future**.

You might then compare that to your views of the company's growth to see if this company might be overvalued or undervalued.

4. Suppose that you graph the EV / EBITDA multiples for a set of similar companies along with the revenue growth rates, EBITDA margins, and EBITDA growth rates.

Which operational metric will MOST LIKELY have the strongest correlation with the EV / EBITDA multiples?

Since a company's value depends on its cash flow, cash flow growth rate, and Discount Rate, the EV/EBITDA multiples are most likely to be correlated with the **EBITDA growth rates**.

While EBITDA, Cash Flow, and Free Cash Flow are very different metrics, EBITDA growth is still closer to cash flow growth than revenue growth is.

EBITDA margins don't make much of an impact unless they are *changing* – only changing margins will produce different growth rates.

There might be some correlation between revenue growth rates and EV/EBITDA multiples, but the correlation will be stronger for revenue growth and EV / Revenue multiples.

5. Despite this principle, why do valuation multiples and growth rates often NOT display as much correlation as you might expect?

First, EBITDA growth and FCF growth are very different since FCF includes taxes, the Change in Working Capital, and the full CapEx amount, whereas EBITDA excludes these.

Company valuation is ultimately based on cash flow growth, so growth rates in revenue, EBITDA, EBIT, and Net Income are, at best, rough approximations of cash flow growth.

Also, not every comparable company necessarily has the same Discount Rate; perhaps the company you're analyzing is a lot riskier, or a lot less risky than the others.

Finally, non-financial factors could easily affect multiples. For example, if the company reported recent legal troubles, announced the development of a new product, or recruited a key executive, all those changes could affect its stock price and therefore its multiples.

6. You're valuing a mid-sized manufacturing company, and you're comparing it to peer companies in the same industry.

This company's EV / EBITDA multiple is 15x, and the median EV / EBITDA for the comparable companies is 10x. What's the MOST likely explanation?

The most likely explanation is that the market expects the company's cash flows to grow more quickly than those of other companies. For example, other companies might be expected to grow at 5%, but this company might be expected to grow at 10%.

The Discount Rate is unlikely to differ by a huge amount because these companies are all about the same size and are in the same industry, which means the risk should be similar.

Non-financial factors could also affect the multiple – for example, recent positive news about strategy, product, executives, intellectual property, or competitive performance might also explain why this company trades at a higher multiple than the others.

7. Would you rather buy a company trading at a 15x EV / EBITDA multiple, or one trading at a 10x multiple?

It's completely dependent on what peer companies are trading at and how this company compares.

If every company in the sector is trading at multiples of 20-25x, then 15x might be cheap; if other companies are trading at multiples of 6-8x, then 10x might be expensive.

When you're *buying* companies, you always try to find ones that are undervalued so that you can sell the stock for a higher price in the future.

8. Could a valuation multiple such as P / E or EV / EBITDA ever be negative? What would it mean?

Yes, it's possible for any valuation multiple to be negative (except for ones based on Revenue, which could be $0 but couldn't be negative).

If a company has a negative Net Income or negative EBITDA, the multiples will turn negative.

It means that this particular multiple is not meaningful for valuing the company, so you'll have to use other multiples or methodologies to value it.

9. If a company has both Debt and Preferred Stock, why is it NOT valid to use Net Income rather than Net Income to Common when calculating its P / E multiple?

You can use Equity Value or Enterprise Value in multiples, but you shouldn't create "half-pregnant" multiples that are based on metrics *in between* Equity Value and Enterprise Value.

Also remember that if you do **not** include an expense in the denominator of a multiple, you **have to** include the Balance Sheet item corresponding to that expense in the numerator (and vice versa).

So if you use Net Income rather than Net Income to Common in this case, you'll have to use a modified version of Equity Value that adds Preferred Stock, but none of the other items that you typically add when calculating Enterprise Value.

This numerator will confuse anyone looking at your analysis, so you should stick with the standard Equity Value calculation and pair it with Net Income to Common.

10. If a company's cash flow matters most, why do you use metrics like EBIT and EBITDA in valuation multiples rather than CFO or FCF?

Mostly for **convenience** and **comparability**. CFO and FCF measure a company's cash flows more accurately, but they also take more time to calculate since you need a full or partial Cash Flow Statement for them.

Also, the individual items *within* CFO and FCF vary a lot between companies, and vastly different figures for Deferred Taxes, Stock-Based Compensation, and the Change in Working Capital make it difficult to create meaningful comparisons.

11. What are the advantages and disadvantages of EV / EBITDA vs. EV / EBIT vs. P / E?

First, you should note that you *never* look at just one multiple when valuing companies. Valuation is about the big picture, and you want to evaluate the company across a variety of multiples and methodologies.

But the interviewer will probably be annoying and press you on this point, so you can say that with EV / EBITDA vs. EV / EBIT, EV / EBITDA is better in cases when you want to *completely exclude* the company's CapEx, Depreciation, and capital structure.

EV / EBIT is better when you want to exclude capital structure, but partially factor in CapEx and Depreciation. It is common in industries, such as manufacturing, where those items are key value drivers for companies.

The P / E multiple is not terribly useful in most cases because it's affected by different tax rates, capital structures, non-core business activities, and more – so you use it primarily to be "complete" and ensure that you've covered all the common multiples.

Also, sometimes it is more relevant and important in certain industries, such as commercial banks and insurance firms, where you *do* want to factor in the interest income and expense.

12. What are the advantages and disadvantages of FCF vs. Unlevered FCF vs. Levered FCF?

The main advantage of Unlevered FCF is that it's capital structure-neutral, so a company's cash flow will be the same regardless of its Cash, Debt, and Preferred Stock. It's also easier and faster to calculate than the others.

You'd use FCF or Levered FCF if you *want* to take into account the company's capital structure, and you'd use Levered FCF to be slightly more accurate since it includes (Mandatory?) Debt Principal Repayments.

You almost always use Unlevered FCF in a **DCF analysis** to value a company; FCF is more common for **standalone** financial statement analysis; and Levered FCF is rare, partially because no one agrees on how to calculate it.

You can create a DCF analysis based on Levered FCF as well, but we strongly recommend against doing this because it's less reliable and harder to set up.

13. When you use EBITDAR in the EV / EBITDAR multiple, how must you adjust Enterprise Value?

If the denominator of a valuation multiple **excludes** an expense, then the numerator should **include** the Balance Sheet item corresponding to that expense (and vice versa).

EBITDAR is EBITDA + Rental Expense, so it **excludes** this annual Rental Expense by adding it back.

So with EBITDAR and EV / EBITDAR, you have to capitalize the company's operating leases, usually by multiplying the annual lease expense by 7x or 8x, and then add the capitalized leases to Enterprise Value.

There is no existing Balance Sheet item since operating leases are off-BS, so you must *create* a new Balance Sheet item by capitalizing these leases.

14. Could Levered FCF ever be higher than Unlevered FCF?

Yes. Levered FCF includes Net Interest Expense, so if the company had a *negative value* for that figure, i.e. it earned more in Interest Income than it spent on Interest Expense, and it also had minimal Debt principal repayments, then Levered FCF might be higher than Unlevered FCF.

This scenario is *highly unusual*, but it is possible.

15. If EBITDA decreases, how do Unlevered and Levered FCF change?

Think of what EBITDA includes: Only Revenue, COGS, and Operating Expenses. Unlevered FCF and Levered FCF also include all those items, *plus more*.

So if EBITDA decreases, it means that Revenue has decreased, or that COGS or Operating Expenses have increased.

If any of those happens, then **both Levered FCF and Unlevered FCF should also decrease** since the Operating Income that flows into both of them will also be lower.

Technically, the FCF figures might stay the same if the D&A, Working Capital, or CapEx change in such a way that the change offsets the drop in Operating Income.

But that's not the main point of the question; it's just an edge case.

16. What are some different ways you can calculate Unlevered FCF?

The main methods are:

- **Method #1:** EBIT * (1 – Tax Rate) + Non-Cash Adjustments and Changes in Working Capital from CFS – CapEx.

- **Method #2:** (EBITDA – D&A) * (1 – Tax Rate) + Non-Cash Adjustments and Changes in Working Capital from CFS – CapEx.

- **Method #3:** CFO – (Net Interest Expense and Other Items Between Operating Income and Pre-Tax Income) * (1 – Tax Rate) – CapEx.

Note that in Method #3, you're **reversing the interest expense**, which is why we used a negative sign for that term. The Interest Expense is a negative on the Income Statement, so if you use a negative sign in front of it, you turn it into a positive.

17. When you calculate Unlevered FCF starting with EBIT * (1 – Tax Rate), or NOPAT, you're not counting the tax shield from the interest expense. Isn't that incorrect?

No, it's correct.

If you're **excluding** the impact of a company's capital structure, you have to exclude **EVERYTHING** related to its capital structure. You can't say, "Well, let's exclude interest… but let's still include the tax benefits from that interest."

The tax savings from the interest expense do not exist if there is no interest expense.

If you counted the tax benefits from the interest expense, you'd have to include the entire interest expense as well, which would turn it into Free Cash Flow rather than Unlevered FCF.

18. Could a company's EV / EBITDA multiple ever equal its P / E multiple?

Yes, it's possible because Enterprise Value, EBITDA, Equity Value, and Net Income could be almost any values.

For example, if Enterprise Value = $100, EBITDA = $10, Equity Value = $50, and Net Income = $5, then EV / EBITDA = 10x and P / E = 10x as well.

In practice, P / E multiples tend to be higher than EV / EBITDA multiples because Net Income is usually smaller than EBITDA by a greater percentage than Equity Value is smaller than Enterprise Value.

19. Two companies have the same P / E multiples but different EV / EBITDA multiples. How can you tell which one has more Debt?

You might be tempted to say, "The one with the higher EV / EBITDA multiple," but that's **wrong**. **You can't answer this question because the companies could be very different sizes.**

For example, if they both have P / E multiples of 15x, but one company has Net Income of $10 and one has Net Income of $100, the one with Net Income of $100 is likely to have more Debt – even if its EV / EBITDA multiple is lower.

If you assume that both companies have *the same* Net Income and *the same* EBITDA, then you can "kind of" answer this question.

In that case, the companies have the same Equity Value, so the company with the higher EV / EBITDA multiple must have a higher Enterprise Value.

Most likely, that means that it has more Debt.

HOWEVER, remember that other items factor into the calculation. Perhaps both companies have the same amount of Debt, but the one with the higher EV / EBITDA multiple has less Cash.

Or the company with the higher multiple has a higher Unfunded Pension or Preferred Stock balance.

But as originally stated, this question is too vague to answer unless you get more information.

20. How do you decide whether to use Equity Value or Enterprise Value when you create valuation multiples?

You have to look at **which group of investors** this operational metric is available to: *All* the investor in the company (Equity, Debt, Preferred, and others), or just common Equity investors?

If it's all the investors, use Enterprise Value; if it's just equity investors, use Equity Value.

One easy rule of thumb is to look at whether the metric includes **Net Interest Expense**. If it does, it pairs with Equity Value; if it does not, it pairs with Enterprise Value.

If you're creating a valuation multiple based on a non-financial metric, such as Unique Users or Subscribers, you almost always use Enterprise Value since those metrics are available to and benefit all the investors in the company.

21. Should you use Equity Value or Enterprise Value with Free Cash Flow?

It depends on the type of Free Cash Flow. If it includes Net Interest Expense, i.e. it is just "Free Cash Flow" or Levered FCF, you use Equity Value.

If it does **not** include the Net Interest Expense, i.e. it is Unlevered FCF, you use Enterprise Value.

22. Two companies have the same amount of Debt, but one company has Convertible Debt, and the other has traditional Debt.

Both companies have the same Operating Income, Tax Rate, and Equity Value. Which company will have a higher P / E multiple?

Since the interest rates on Convertible Debt are lower than the rates on traditional Debt, the company with Convertible Debt will have a lower interest expense and therefore a higher Net Income.

As a result, its P / E multiple will be lower. So the company with Convertible Debt will have a lower P / E multiple, and the company with traditional Debt will have a higher P / E multiple.

Advanced Note: Technically, you may have to reflect on the Income Statement the "Amortization of the Convertible Bond Discount," which is a number that reflects how the Liability component of a Convertible Bond is worth less than a normal Bond because of the lower interest rate. If you do this, then the Net Incomes of both companies will be much closer, and the P / E multiples may be almost the same.

23. A company is currently trading at 10x EV / EBITDA. It wants to sell an Asset for 2x the Asset's EBITDA. Will that sale increase or decrease the company's Enterprise Value?

It depends on what type of Asset it is. Assuming that it is a *core-business Asset*, then the sale will reduce the company's Enterprise Value because the company is trading away the Asset for Cash, which is a non-core-business Asset.

If it's *not* a core-business Asset, then the company's Enterprise Value won't change.

Even though the company's Enterprise Value decreases in the first case, its EV / EBITDA multiple **increases** because the Asset's multiple was lower than the multiple for the entire company.

Pretend that the company's total EBITDA was $100, and this Asset contributed $20 of that EBITDA. The company's Enterprise Value before the sale was, therefore, $1,000.

The company now sells the Asset for $40. After the sale, the company's Enterprise Value falls by $40, and its EBITDA falls by $20. So its new EV / EBITDA is $960 / $80, or 12x.

This is why companies often sell under-performing divisions: To boost their valuation multiples and increase their stock prices.

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Calculating Equity Value and Enterprise Value

1. Is it accurate to subtract 100% of the Cash balance when moving from Equity Value to Enterprise Value?

No, but everyone does it anyway. The reasoning is that a portion of any company's Cash balance *is* a "core-business Asset" because the company needs a certain minimum amount of Cash to continue running its business.

So technically, you should subtract *only* the Excess Cash, i.e. the portion of the Cash balance above this number. For example, if the company has $1,000 in Cash but needs only $200 to run its business, you should subtract $800 rather than $1,000 when calculating Enterprise Value.

However, companies rarely disclose this number, and it is almost impossible to determine on your own, so in practice, everyone just subtracts the entire Cash balance.

2. Why do you NOT subtract Goodwill when moving from Equity Value to Enterprise Value? The company doesn't need it to continue operating its business.

Goodwill **is** a core-business Asset, so you should **NOT** subtract it when moving to Enterprise Value.

Remember that Goodwill reflects the premiums paid for companies that the company previously acquired – if you subtracted it, you'd be saying, "Those previous acquisitions are **not** a part of this company's core business anymore."

And that's true only if the company has shut down or sold those companies, in which case it removes all Assets and Liabilities associated with them.

3. Why might you subtract only part of a company's Deferred Tax Assets (DTAs) when calculating Enterprise Value?

Deferred Tax Assets can contain many different items, some of which are related to simple timing differences or tax credits for operational items.

But you should subtract **ONLY** the Net Operating Losses (NOLs) that are in the DTA because those are non-operational in nature.

There is some controversy on exactly *which figure* to subtract since NOLs are off-Balance Sheet Assets with a small presence (roughly, NOLs * Tax Rate) within the DTA.

So some people argue that you should use the off-BS figure, some argue that it should be the on-BS figure, and some argue for other approaches, such as calculating the PV of tax savings from the NOL and subtracting that.

Don't mention all of this in interviews – just acknowledge that you subtract NOLs when moving from Equity Value to Enterprise Value.

4. Why might someone argue that you should NOT add capital leases when moving from Equity Value to Enterprise Value?

Some people argue that capital leases are **operational items** since owning vs. renting buildings (or planes, stores, etc.) is an operational decision, not a financial one.

If capital leases are "operational liabilities" and they do not represent another investor group, you should not add them in this calculation.

We disagree with this view because, in our opinion, all leases are **financial** in nature – they're similar to Debt since they require fixed payments for many years under non-cancelable contracts.

So we treat capital leases as a Debt-like item, and we recommend capitalizing operating leases, especially in industries where some companies rent and others own property.

5. How do you factor in Working Capital when moving from Equity Value to Enterprise Value?

You don't. Remember that Equity Value represents the value of **ALL** the company's Assets but **only** to equity investors.

So you subtract items only if they're non-core-business Assets, and you add Liability and Equity line items only if they represent different investor groups.

The Assets that comprise Working Capital all count as core-business Assets (e.g., Inventory, Accounts Receivable, Prepaid Expenses, etc.), and the Liabilities in Working Capital are all operational items that do **not** represent other investor groups (e.g., Accrued Expenses, Deferred Revenue, etc.).

So there's no reason to add or subtract Working Capital, as both Equity Value and Enterprise Value reflect it implicitly.

6. Why do you subtract Equity Investments, AKA Associate Companies, when moving from Equity Value to Enterprise Value?

Two reasons. First, they're *non-core-business Assets* since the company could operate fine without them. You should, therefore, exclude them from Enterprise Value.

Second, you need to do this for comparability purposes. Metrics like EBITDA, EBIT, and Revenue include 0% of these Equity Investments' financial contributions, but Equity Value implicitly includes the value of the stake.

So if a Parent Company owns 30% of an Associate Company, the Parent Company's Equity Value will include the value of that 30% stake. However, its Revenue, EBIT, and EBITDA include **nothing** from it.

Therefore, you have to subtract this 30% stake when moving from Equity Value to Enterprise Value to ensure that all Enterprise Value-based valuation multiples exclude Equity Investments in both the numerator and the denominator.

7. Why do you add Noncontrolling Interests when moving from Equity Value to Enterprise Value?

First, these Noncontrolling Interests represent another investor group: Another company that the Parent Company owns a majority stake in. Enterprise Value reflects **all** the investor groups in a company, so you must add Noncontrolling Interests.

Second, you need to do this for comparability purposes. Since the financial statements are consolidated 100% when the Parent Company owns a majority stake in the Other Company, metrics like Revenue, EBIT, and EBITDA include 100% of the Other Company's financials.

Equity Value, however, includes only the value of the actual percentage the Parent owns.

So if a Parent Company owns 70% of the Other Company, the Parent Company's Equity Value will include the value of that 70% stake. But its Revenue, EBIT, and EBITDA reflect *100%* of the Other Company's Revenue, EBIT, and EBITDA.

Therefore, you have to add the 30% the Parent Company **does not own** – the Noncontrolling Interest – when you move from Equity Value to Enterprise Value, so that Enterprise Value reflects 100% of that Other Company's value.

Doing so ensures that metrics such as EV / Revenue and EV / EBITDA include 100% of the Other Company's value and financial contributions so that the multiples are consistent.

8. If a company has $10,000 in convertible bonds with a par value of $2,000 and a conversion price of $20.00, how many diluted shares will there be?

There is not enough information to answer the question. You also need to know the current stock price of the company to see if the convertible bonds could convert and create additional shares.

9. A company has 100 shares outstanding, and its current share price is $10.00. It also has 10 options outstanding at an exercise price of $5.00 each. What is its Diluted Equity Value?

Its Basic Equity Value is $1,000, or 100 * $10.00. To calculate the diluted shares, note that the options are all "in-the-money" – their exercise price is less than the current share price.

When these options are exercised, 10 new shares get created – so the share count is now 110 rather than 100.

The investors paid the company $5.00 to exercise the options, so the company gets $50 in cash. It uses that cash to buy back 5 of the new shares, so the diluted share count is 105, and the Diluted Equity Value is $1,050.

10. A company has 100 shares outstanding, and its current share price is $10.00. It also has 10 options outstanding at an exercise price of $15.00. What is its Diluted Equity Value?

$1,000. The options' exercise price is above the current share price, so they have no dilutive effect.

11. A company has 1 million shares outstanding, and its current share price is $100.00. It also has $10 million of convertible bonds, with a par value of $1,000 and a conversion price of $50.00.

What are its diluted shares outstanding?

First, note that these convertible bonds are convertible because the company's share price is above the conversion price. So you count them as additional shares rather than Debt.

Next, you divide the value of the convertible bonds – $10 million – by the par value – $1,000 – to figure out how many individual bonds there are:

$10 million / $1,000 = 10,000 convertible bonds.

Next, the number of shares per bond is the par value divided by the conversion price:

$1,000 / $50.00 = 20 shares per bond.

So the convertibles create 20 * 10,000, or 200,000 new shares, and the diluted share count is 1.2 million.

You don't use the Treasury Stock Method with convertibles because the investors don't pay the company anything to convert the bonds into shares.

12. A company has 10,000 shares outstanding and a current share price of $20.00. It has 100 options outstanding at an exercise price of $10.00.

It also has 50 Restricted Stock Units (RSUs) outstanding.

Finally, it also has 100 convertible bonds outstanding at a conversion price of $10.00 and par value of $100.

What is its Diluted Equity Value?

Since the options are in-the-money, you assume that they get exercised, so 100 new shares are created.

The company receives 100 * $10.00, or $1,000, in proceeds. Its share price is $20.00, so it can repurchase 50 shares with these proceeds. There are now 50 additional shares outstanding (100 new shares – 50 repurchased).

You add the 50 RSUs as if they were common shares, so now there's a total of 100 additional shares outstanding.

The company's share price of $20.00 exceeds the conversion price of $10.00, so the convertible bonds can convert into shares.

Divide the par value by the conversion price to determine the shares per bond:

$100 / $10.00 = 10 new shares per bond

There are 100 convertible bonds outstanding, so you get 1,000 new shares (100 convertible bonds * 10 new shares per bond).

All of these changes create 1,100 additional shares outstanding, so the diluted share count is now 11,100, and the Diluted Equity Value is 11,100 * $20.00, or $222,000.

13. This same company also has Cash of $10,000, Debt of $30,000, and Noncontrolling Interests of $15,000. What is its Enterprise Value?

You subtract the Cash, add the Debt, and then add Noncontrolling Interests:

Enterprise Value = $222,000 – $10,000 + $30,000 + $15,000 = $257,000.

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